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HANDBOOK OF ARCHITECTURE

Part II

Architectural styles

Volume IV

ROMANESQUE AND GOTHIC ARCHITECTURE

Part I. Military Architecture

By

Dr. August von Essenwein

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Translated by N. Clifford Ricker. D. Arch.

Emeritus Professor of Architecture

UNIVERSITY OF ILLINOIS

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VOLUME 4 ROMANESQUE AND GOTHIC ARCHITECTURE
PART I. HISTORY ARCHITECTURE.
INTRODUCTION.

The surges of the migrations of the nations had ceased. The
peoples from East and West had partly wandered back to their
former seats, partly settled in the South, or they had combi-
ned with the former population into new states, and developed
the foundations of new nationalities. In the central point of
ancient civilization, in Italy the Lombards had maintained
themselves, but had been transformed more and more with the
Romans into Italians, a people appearing with an individual
character. In Spain the Visigoths, mixed with the old popula-
tion, began to become Spaniards. The Franks seated in France
also already mixed with the Gauls, commenced to become French,
as they made the other German races subject to themselves, a
certainly no longer with the view of settling them in their
native seats; for they already had fixed seats like the other
peoples. It merely concerned them to dominate all others from
their own country, just as the Romans had done. The greatest
monarch of the Franks, to whom history has given the name of
the Great, would restore their empire, when he subjugated the
allied races of Germany and of Italy. United with the Church,
his empire should become an empire of peace.

But in spite of the rule of Christianity the generally des-
tined peace on earth, the universal peace could not be estab-
lished. The independent feeling of some, the dominance of oth-
ers, or also the reliance on the power of the sword, the mis-
trust of one in the readiness of all others for peace were
too great, for peace to be general and permanent. Just each
one saw was ensured only so far, as he could trust to his ad-
vantage. The unity of the empire of Charlemagne could not be main-
tained in opposition to the desire of each of his heirs to
rule for himself, so far as the point of his sword reached.
But there also existed certain peoples, not contented with
their dwelling places, ready to fight anew and threatening
the permanently settled peoples. Normans, Slavs and Hungarians
as stood ready to throw themselves upon the peaceful European
nations, great danger impending over them on another side.

Nearly at the same place at which the religion of the Cross
was given to the nations, a new religion arose 600 years later,

VOLUME 4. ROMANESQUE AND GOTHIC ARCHITECTURE.

Part 1. Military Architecture.

INTRODUCTION.

The surges of the migrations of the nations had ceased. The peoples from East and West had partly wandered back to their former seats, partly settled in the South, or they had combined with the former population into new states, and developed the foundations of new nationalities. In the central point of ancient civilization, in Italy the Lombards had maintained themselves, but had been transformed more and more with the Romans into Italians, a people appearing with an individual character. In Spain the Visigoths, mixed with the old population, began to become Spaniards. The Franks seated in France also already mixed with the Gauls, commenced to become French, as they made the other German races subject to themselves, certainly no longer with the view of settling them in their native seats; for they already had fixed seats like the other peoples. It merely concerned them to dominate all others from their own country, just as the Romans had done. The greatest monarch of the Franks, to whom history has given the name of the Great, would restore their empire, when he subjugated the allied races of Germany and of Italy. United with the Church, his empire should become an empire of peace.

But in spite of the rule of Christianity the generally desired peace on earth, the universal peace could not be established. The independent feeling of some, the dominance of others, or also the reliance on the power of the sword, the mistrust of one in the readiness of all others for peace were too great, for peace to be general and permanent, that each one saw was ensured only so far, as he could trust to his sword. The unity of the empire of Charlemagne could not be maintained in opposition to the desire of each of his heirs to rule for himself, so far as the point of his sword reached. But there also existed certain peoples, not contented with their dwelling places, ready to fight anew and threatening the permanently settled peoples. Normans, Slavs and Hungarians stood ready to throw themselves upon the peaceful European nations, great danger impending over them on another side.

Nearly at the same place at which the religion of the Cross was given to the nations, a new religion arose 600 years later,

that of Islam, and if the cross had extended its shade peacefully over the warlike world, Mohammed's adherents struggled to spread their faith by fire and sword, and to ensure to it in such manner the rule of the world. They had soon subjugated western Asia and civilized Africa, sought to penetrate from Spain into Europe, and threatened from the West the eastern Christian communities, as they were threatened from the East by the Byzantine empire. Meantime also Islam, like Christianity, had carried germs in itself or had found such among the peoples, that it first made its own, and to which therefore fell the rule in its empire, that became the foundation for the development of an individual civilization and likewise of an elevated art. They certainly required time for their development, and at first only the warlike rule of Islam made itself felt, and brought to the West the need of keeping its swords sharp.

The Church zealously endeavored to maintain the world at peace; it developed the ideal of a world empire, that with the emperor at the head, should include all nations belonging to it in its peace, should form the empire of God as the empire of the Church, an entity mighty by the power of the emperor, from whom all others held their own in fief, elevated to civilization by the influence of the Church, that was the spirit of this body, led by it, which ennobled each individual. All would lead to eternal blessedness. The conception was and remained an ideal, that was never attained, since cares and misfortunes led mankind from the way, by which alone it was to be reached. The world was and remained an empire of war.

To give this Christian importance, thereby to idealize it, was the only thing to which the Church on earth could attain. The warrior became a knight, whose highest aim was the combat with unbelievers, against Islam. To take away from it the places in which the Savior had lived and worked, to erect a new Christian kingdom there, was the highest problem of the knight. Thus a part of the best strength of the West passed into the East to seek battle there. A close contact of Christians and mohammedans occurred, and just this period of contact, this time of combat is it, in which both civilizations were apparently independent of each other, and yet were influenced by rivalry in a higher sense, developed entirely different

from such cases is their characteristic peculiarities.
In the preceding half volume is laid down the consideration
of the modern art. There are characteristics of elements, the
statement being given from which it developed. It is shown in-
deed that in the 15th century was formed the individuality, not
in the 16th century the art became complete with the finest
characteristics. We now have to show, not the procedure in
the 17th century but the procedure in the 18th century with us in the
19th century a poetic literature characterized all works of art,
called forth a flowering of these with us, which does not yet
and is close to the works of the 18th. Just as with the 15th
century the art of Islam no more increased its innate impor-
tance, as it still won in combat, but limited itself to a form-
al play of lines, so likewise with us. If with the 15th cen-
tury the art of Islam became fixed, and without creating any-
thing more properly new, it lived for centuries in that way
been produced, then with us the course was entirely different.
In the 15th century the entire culture was in the service of a
single idea, followed the same direction, from which a der-
ivation was never not possible. In the 18th century a der-
ivation was possible of culture could take other directions.
The 18th century was a time of transition, a time of
transition, the spirit of the citizens commenced to win that in-
fluence, which made it possible for it to influence the direc-
tion of the time. Thus it was made possible for us, that the
18th century designated a new epoch. Indeed in formal respects
it was at first dependent on what the 15th century had crea-
ted, that we regard as the last period of medieval art, and
the forms of the 15th century have lost something of the earnest dis-
tinctness, which dominated in the 15th century, so that with a
certain freedom we may say that the 18th century is a time of
transition. But if we look retrospectively, then some something more
is different again from before; there appears so many new ele-
ments; what in a weaker way was brought from the earlier time
and was continued, is so secondary and purely external, that
still then the time may be regarded not merely as one of der-
ivation of the older art, but appears as one entirely new, that
has not actually broken with the older tradition. But again
about the change from the 15th to the 18th centuries we see
the change and find that the change is not a complete break

from each other in their characteristic peculiarities.

In the preceding half volume is laid down the consideration of Mohammedan art. There are characterized its elements, the elements being given from which it developed. It is shown just how in the 12 th century was formed the individuality, how in the 13 th century the art became complete with the finest characteristics. We now have to show, how the procedure in the West was entirely contemporary, how also with us in the 13 th century a poetic fragrance beautified all works of art, called forth a flowering of these with us, which does not yield in charm to the works of the East. Just as with the 14 th century the art of Islam no more increased its innate importance, as it still won in charm, but limited itself to a formal play of lines, so likewise with us. If with the 15 th century the art of Islam became fixed, and without creating anything more properly new, it lived for centuries on what had been produced, then with us the course was entirely different. In the East the entire culture was in the service of a single idea, followed the single direction, from which a derivation was indeed not conceivable. In the West new ideas, new spiritual currents of culture could give other directions, and as the knightly period began to diminish in spiritual importance, the spirit of the citizens commenced to win that influence, which made it possible for it to indicate the direction of the time. Thus it was made possible for us, that the 15 th century designated a new epoch. Indeed in formal respects it was at first dependent on what the 13 th century had created, that we regard as the best period of mediaeval art, and the forms of the 15 th have lost something of the earnest dignity, which dominated in the 13 th century, so that with a certain right we may designate the 15 th century as a time of decline. But if we look correctly, then acts something entirely different again from before; there appear so many new elements; what in a weaker way was brought from the earlier time and was continued, is so secondary and purely external, that still then the time may be regarded not merely as one of decline of the older art, but appears as one entirely new, that had not suddenly broken with the older tradition. But again about the change from the 15 th to the 16 th centuries we see art assume new forms; meantime however apparently different

are the external forms, yet their nature and spirit are scarcely different, but only a little further developed than during the entire 15 th century, and the introduction of new external forms is nothing more than a new proof, that in contrast to the Mohammedan, Christian-Western civilization was able to adopt new ideas and to give them form.

But one thing continued through the entire middle ages. Just as little as the knightly, the citizen period following it was a time of peace; also its development completed itself under the rule of the same elements, that in the preceding periods had opposed the ideal. The tendency toward independence of the individual, who would not join himself to a great entirety, and the rule of the same, who made yet others subject, and would restrict their interests, pressed weapons into the hands of every one. Tumults of war filled the world at all times of the middle ages, and if it was not the great war of people against people, it was the little war of man against man, of princes and nobles against their equals and against the cities, that raged everywhere.

Whoever was not equipped for war and strong enough to defend himself against everyone, who might come, was lost. To serve the ideal, to rise by it, to beautify his life by its culture, could only do so, who was strong and powerful enough to defend his ideal and also his existence. Nothing and no one had a higher importance, than was given him by the strength of his arm. Even the dignity of the emperor gave him no other importance, than any other had, unless the greatness of his power placed him condition to give his dignity weight. Everything rested on the point of the sword; only under the protection of the sword could any civilization develop, only under its protection could art flourish. Great undertakings of whatever kind, however important for the progress of civilization, could only flourish under the protection of a great power, and the more the subdivision, the smaller the power of the individual, and so much smaller must the undertakings be; but so much the greater their number and more varied their kind. Since the architectural works were thus dependent primarily on the conditions of power of those building, structures are also the first, that must form the foundation of all civilization undertaken, and so is also most faithfully reflected

in the buildings the external course of the history of the middle ages.

General I. General.

1. Political Organization: Mode of Life.

The security that every city must afford, as which civiliza-
tion should exist, is based on the least possibility of con-
quest, rests on responsibility for a mobile army and difficult-
ty of attack, on the other hand being easy removal of such a
and convenient defense in general. What is true for the indi-
vidual city, also comes in consideration for broad regions
and states. The political organization of the latter must be
carefully studied or regulated by art. The monarch's care av-
ailed primarily against any invading foreign enemy, or against
a discontented and rebellious people, such as internally and de-
fiant vassals. The power of the ruler rested on his army, his
assurances on that each individual was bound by his interest
to keep faith, that he had sworn to him. Only by the entirety
of the men could the population of the country be held down,
of whose revenue the monarch benefited to such an extent as cor-
responded to his rank. Thus already in the Carolingian peri-
od was formed feudalism, the only means for combining all ele-
ments, so far as arms could lead to the condition, to prose-
cure and support all by unity, when each one had definite duties
so assigned to him, with this toward higher persons, and for
all finally toward the king, who appeared as ideal yet
the connection of the king with the emperor, and in consequent
their association under him. The duties of the individ-
uals were great; therefore to each one was given a power and
a corresponding possession as a fief. The fief was thought
the entire given in great fiefs by the emperor to the king,
these being his vassals. Accordingly the king divided his ter-
ritory into great fiefs, that he gave to the great vassals, to
bishops and counts in Germany; these divided them again into
smaller fiefs, which he gave to knights, who in turn gave them
the individual man, each of whom had his duty for this to a
corresponding knight with a corresponding party, and so with
him to render to the king military service, to put in contin-
ence of defense the land assigned to him, and so remain there
in, to defend and protect it in case of attack until further
order came, to rule the land properly in peace, to recover and
care in the name of his superior in war and peace, to keep

A. MILITARY ARCHITECTURE.

Chapter 1. General.

1. Political Organization; Mode of Life.

The security that every city must afford, at which civilization should exist, is based on the least possibility of conquest, thus on inaccessibility for a hostile army and difficulty of attack, on the other hand being easy repulse of such a and convenient defense in general. What is true for the individual city, also comes in consideration for broad regions and entire countries. What nature offered for safety must be carefully utilized or replaced by art. The monarch's care availed primarily against any invading foreign enemy, or against a discontented and rebellious people, such as unruly and defiant vassals. The power of the ruler rested on his army, its assemblage on that each individual was bound by his interest to keep faith, that he had sworn to him. Only by the entirety of the men could the population of the country be held down, of whose revenue the monarch assigned to each so much as corresponded to his rank. Thus already in the Carolingian period was formed feudalism, the only means for combining all elements, so far as arms could lead to the condition, to protect and support all by unity, when each one had definite duties assigned to him, with this toward higher persons, and for all finally toward the king, whereto appeared as ideal yet the connection of the kings with the emperor, and in conception their subordination under him. The duties of the individuals were great; therefore to each one was given a power and a corresponding possession as a fief. The ideal was thought the empire given in great fiefs by the emperor to the kings, these being his vassals. Accordingly the king divided his realm into great fiefs, that he gave to the great vassals, to dukes and counts in Germany; these divided them again into such for the middle tenants, the latter theirs into those for the individual man, each of which had his duty for this to accompany his superior with a corresponding party, and go with him to render to the king military service, to put in condition of defense the land assigned to him, and to remain thereon, to defend and protect it in case of attack until further help came, to rule the land properly in peace, to govern and care in the name of his superior in war and peace, to keep

was with the himself and his men in war and peace. This
local arrangement, whose actual condition was certain-
ly can clearly show at no time and in no country, but which
rested on the lines of all villages. The line was not
clear, but it was the line of the village.
ration for the defense of the land.

All the time the village was a village of the village.
also after a well devised plan; a plan which from which the
ravaged enemy could be fought, even one of which must be
war, before the enemy could penetrate further, but even of a
village must be a village of the village.
organized behind it. The plan of the village was the plan
of a village, who with the help of his village was to build,
maintain and defend it, was the plan of the village and
then to him were sufficiently extensive, that the village
was it possible for him to build the village. He did not
give the land as his property; but as a village, that he had to
rule as an official, belonged to him the land, city or castle.
while the castle had to be kept closed against all others, it
stood open to the feudal superior and his officers, and finally
in the village, it was the village of the village.
there must everywhere be security and protection, from every
point the village of all must be cared for. So should it be
land; but still interest and desire to rule, in the village
and in the village of the village.

Germania showed the security of the land was not the final
purpose; it should only give the possibility of a successful
development. A country not capable of this had no value; it
could not be possessed and ruled; it had no value; only if it
had its own, or if it served as a highway, as a connect-
ion between two valuable countries, had it value of itself.
Only a profitable and good land did an enemy seek to make his
own; only such therefore required defense and protection. The-
fore security in case of war was not the sole problem of
the organization; rather the requirements of peace stood in
the first place; what was done for war must restrict these as
little as possible. It must be possible to the countryman
to cultivate the fields; there must be developed places where

true faith for himself and all his men in war and peace. This ideal arrangement, whose actual condition historians certainly can clearly show at no time and in no country, but which rested on the finest of all virtues, the fine unchangeable truth, corresponded as far as possible to the external preparations for the defense of the land.

2. Defense of the Country.

All countries were strewn with a network of cities and castles after a well devised plan; strong places from which the invading enemy could be fought, each one of which must be taken, before the enemy could penetrate farther, but each of which must at least hold out until a strong resistance was organized behind it. Each of these strong places was the seat of a nobleman, who with the help of his vassals had to build, maintain and defend it, wherefore the land and subjects assigned to him were sufficiently extensive, that its revenues made it possible for him to fulfil the duty. He did not receive the land as his property; but as a fief, that he had to rule as an official, belonged to him the land, city or castle. While the castle had to be kept closed against all others, it stood open to the feudal superior and his officers, and finally to the emperor, in whose name all was ruled and done, that there might everywhere be security and protection, from every point the safety of all must be cared for. So should it be at least; but self interest and desire to rule, insubordination and faithlessness often enough made something entirely different in the fine arrangements.

Meanwhile indeed the security of the land was not the final purpose; it should only give the possibility of a successful development. A country not capable of this had no value; to conquer it, to possess and defend it had no sense; only if it fed its occupants, or if it served as a gateway, as a connection between two valuable countries, had it value of itself. Only a profitable and good land did an enemy seek to make his own; only such therefore required defense and protection. Therefore security in case of war was not the sole problem of the organization; rather the requirements of peace stood in the first place; what was done for war must restrict these as little as possible. It must be possible to the countryman to cultivate the fields; there must be developed places where

The industrial blossoming; there must be possible a corresponding
and general traffic near and far, whose course could indeed
be closed at any moment, even if there were no doubt of the
technical purpose, but which raised forward the aim of the road.
The general traffic, so much more valuable was the count-
ry, but also better founded was the fear, that on his own ac-
count an enemy would invade his land. The greater the capacity
for defence, so much more necessary was it, more extensive
cases in the arrangement of the defensive measures.

Therefore when in the 10th century the fortified fort of
new invasions placed before the eyes of all soldiers the neo-
essary of the strictest fortification among themselves, and
on by the unity of all who alone be strong enough to pro-
tect all, developed this system of the organization of strong
places, which now fills with amazement, and for Germany it is
King Henry I. at whom we wonder as the founder of cities and
castles. While in the state of ancient civilization in Italy
and France it mostly tended to erect the fortifications of
these cities, that already the Romans had selected in similar
respects, there must be created new fortresses in Germany in
the measure, in which in place of patless forests the land
was distributed over the land.

Everywhere that a piece of arable land had been created fr-
on the forest (even today the villages there originated from
castles) the castle was the center of the village, and a hill-
was necessary. The magnitude of the village district, or was-
to the measure occupied separate farm courts, whose count-
ies were self-determined, so that the counterman did not have
to go too far from his dwelling to the outer fields, that the
every day he must spend on the way should not be out of
proportion to the time, that he could devote to the produc-
tion of the ground, and therefore the outer fields should not
lie too far outside the range of his vision. Thus it developed
the number of countymen who formed a village. Therefore
also, where single farm courts did not form the rule, the num-
ber of castles in a village seldom exceeded a certain limit;
the village. So far as forests of considerable extent

the industries blossomed; there must be possible a corresponding peaceful traffic near and far, whose course could indeed be closed at any moment, even if there were no doubt of the peaceful purpose, but which indeed formed the aim of the road. The greater the traffic, so much more valuable was the country, but also better founded was the fear, that on his own account an enemy would menace the land. The greater the capacity for revenue, so much more necessary was the most extreme care in the arrangement of the defensive measures.

Therefore when in the 10 th century the justified fear of new invasions placed before the eyes of all settlers the necessity of the strictest subordination among themselves, which by the unity of all would alone be strong enough to protect all, developed this system of the organization of strong places, which now fills with amazement, and for Germany it is king Henry I, at whom we wonder as the founder of cities and castles. While in the seats of ancient civilization in Italy and France it mostly sufficed to erect the fortifications of those cities, that already the Romans had selected in similar respects, there must be created new fortresses in Germany in the measure, in which in place of pathless forests the land was open for the plow, and the population necessary for this was distributed over the land.

3. Farm Courts and Villages.

Everywhere that a piece of arable land had been wrested from the forest (even today the villages there originated frequently bear the names "Reuth and Rode" (clearing)), was a village necessary. The magnitude of the village district, or where the peasants occupied separate farm courts, whose boundaries were self-determined, so that the countryman did not have to go too far from his dwelling to the outer fields, that thereby the time he must spend on the way should not be out of proportion to the time, that he could devote to the preparation of the ground, and therefore the outer fields should not lie too far outside the range of his vision. Thus it depended on the number of countrymen who formed a village. Therefore also, where single farm courts did not form the rule, the number of peasants in a village seldom exceeded a certain limit; 50 to 60 of these with their families already composed a public village. So far as forests of considerable extent between

the village contains in the public interest, the village ad-
joined each other as closely as possible. In the midst of a
number of villages were to be found cities, in which citi-
zens and merchants could dwell in order to satisfy the needs
of the vicinity. The roads must lead through the country from
city to city; even the villages and separate farm courts must
be accessible and be connected with the nearest city; traffic
must be unimpeded, the highways, at least, must be
broad and clear of the first thousand years, there were too
many obstacles to traffic, especially, through the difficulty
and perhaps only at certain seasons, placed outside the traf-
fic as impassable. But also on the hills and in the plains
were extensive forests, through which no road passed, in the
latter further being needed, narrow and unsafe roads, con-
ducive to traffic. To avoid these was the problem of the traf-
fic organization. First of all the traffic roads must be made
secure: on them must be arranged villages at definite dis-
tances, in which the traffic could be carried out, and the
on and another, in which no could obtain the aid of an ar-
my for himself and his horses and wagon, or if he went by wa-
ter, for his vessel. These villages must be secured by ar-
ranged

4. Serfs and Free Citizens; Cities.

The rural population, so far as they cultivated the ground,
and the cities, which were the centers of the country, were
in the soil. They could not bear weapons and could not
fight. They were under the protection and also under the orders
of the warriors, who protected country and people, nothing but
that then if they desired to rest anywhere. Every place and ev-
ery village had its master, and in the village was at least
a strong house in which the warriors dwelt. Even the cities
and their lords. But their population at least for a great
part could bear arms, and even if not so from the beginning,
soon became free. Not merely the purpose to afford opportuni-
ty for the adjacent rural population and those traveling the
roads to have artisans and merchants in the vicinity, but al-
so, where the safety of the roads required it, to have
cities. Likewise their magnitude was neither accidental nor

the village domains in the public interest, the villages adjoined each other as closely as possible. In the midst of a number of villages were to be founded cities, in which citizens and merchants could dwell in order to satisfy the needs of the vicinity. The roads must lead through the country from city to city; even the villages and separate farm courts must be accessible and be connected with the nearest city; traffic also now established its requirements. As conditions existed toward the close of the first thousand years, there were rough precipices or lofty mountains, passable with difficulty and perhaps only at certain seasons, placed outside the traffic as impassible. But also on flat hills and in the plains were extensive forests, through which no road passed, in the latter further being heaths, morasses and unsafe ground, obstacles to traffic. To avoid these was the problem of the traffic organization. First of all the traffic roads must be made secure; on them must be arranged villages at definite distances for the traffic in peace, in which the wanderer found food and shelter, in which he could obtain the aid of an artisan for himself and his horses and wagon, or if he went by water, for his vessel. These villages must be secured by defensive measures.

4. Serfs and Free Citizens; Cities.

The rural population, so far as they cultivated the ground, were not its masters. They were serfs,¹ belonging to and bound to the soil. They could not bear weapons and should not. Thus they were under the protection but also under the orders of the warriors, who protected country and people, holding under them if they desired to rent anything. Every place and every village had its master, and in the village was at least a strong house in which its magistrate dwelt. Even the cities had their lords. But their population at least for a great part could bear arms, and even if not so from the beginning, soon became free. Not merely the purpose to afford opportunity for the adjacent rural population and those traveling the roads to have artisans and merchants in the vicinity, but also the necessity for protection of the country at certain localities, where the safety of the roads required it, to have a larger garrison, was it that determined the arrangement of cities. Likewise their magnitude was neither accidental nor

conditions. The conditions of traffic on the one hand limited the number of the central authorities; from the importance of the location resulted the number of the necessary delegates. According to the number of delegates was made the length of the wall about a city. The location extruding on traffic and industry provided the delegates. They must therefore be organized in a corresponding manner; on the one hand by the interest of the needs was determined the number required from each group and so on left by the other hand the members of one or more trades were organized in corporate guilds, to each such body being assigned a definite duty in case of war. Corresponding to the feudal system, it was therefore first demanded for the corporation of new members in the corporation was only possible, and only concerned to prove the necessary number of delegates to each guild.

Note 1. p. 1. The conception of "free" and "servile" is certainly not in the modern sense, but is understood to be limited to the position of the person before the law. But also the latter did not stand before the law as a free person.

The origin of the "guilds" was one purely military. From the war officials, the service men in the country and in the military seats, so many of which were embodied, developed the military nobility in the course of time, from the city soldiers to the citizen class, whose best placed elements formed the "nobles", i.e., the only nobles (patricians), while the rest of the population, the lower nobles lived in a sort of isolation, as lower nobles likewise lived in a sort of isolation. Many peculiarities in the appearance of the old cities are explained only on this ground of the conditions.

5. Castles.

Similarly to the manor and the warlike importance of the cities, as that of the castles expanded on their part in the general defense of the country. A certain city required a castle, or that the location made its founding possible; thus men were satisfied by founding a castle, which merely received

capricious. The conditions of traffic on the one hand decided the number of peaceful inhabitants; from the importance of the location resulted the number of the necessary defenders. Both were in intimate relations. According to the number of defenders was made the length of the wall drawn around a city. The population carrying on traffic and industry provided the defenders. They must therefore be organized in a corresponding manner; on the one hand by the judgment of the needs was determined the number required from each trade and to be fed by it; on the other hand the members of one or more trades were combined in corporate guilds, to each such body being assigned a definite duty in case of war. Corresponding to the feudal system, it was therefore first guaranteed for the certainty of the subsistence of the different members, that the acceptance of new members in the corporation was only promised, and only occurred to proved the necessary number of citizens able to bear arms, to satisfy the military requirements, assigned to each guild.

Note 1. p. 7. The conception of "free" and "serf" is certainly not in the modern sense, but as understood to be limited; dukes and counts were also the king's vassals, thus not being absolutely free. But also the latter did not stand before his master without any rights.

The origin of the "guilds" was one purely military. From the war officials, the service men in the country and at the princely seats, so many of which were embodied, developed the country nobility in the course of time, from the city soldiers came the citizen class, whose best placed elements formed the "families", i.e., the city nobles (patricians), while that part of the city population, to which the defense was not directly assigned, as later settlers likewise lived in a sort of serfdom. Many peculiarities in the appearance of the old cities are explained only on this ground of the conditions.

5. Castles.

Similarly to the magnitude and the warlike importance of the cities, is that of the castles grounded on their part in the general defense of the country. A certain city required security, without which the traffic made a city necessary to there, or that the location made its founding possible; thus men were satisfied by founding a castle, which merely received

so much of a garrison, that it only created in itself even t the most essential in the needs of the life of the citizens, but otherwise in regard to their needs calls were made both on the rural population and on the nearest city. Each city had, like its lord, also its castle. Occasionally a city was added gradually to a castle, where the location permitted this. We can clearly follow this in most cases, and it will be mentioned later, when we consider city plans more fully.

6. Basis of Organization; Relaxation of this.

In general the entire basis of this organization extends back into the 10 th century in political, as in relation to fortifications for Germany, at which time indeed many older elements already existed, that could be utilized. The further development was completed from then until the 13 th century under the influence of continually increased desire of independence, and therewith a constant loosening of the homogeneity of all in a great entirety, as well as the combination of all for a common purpose. The dukes, instead of being the king's officers, strengthened their power and possessions, made their fiefs heritable, and already in the 12 th century appeared as independent princes, who did not "give to the emperor what belonged to him", but only what seemed good to them, and the power of the emperor and of the king could not be strong enough, that he was actually their master. Likewise the counts sought to make their offices and also their fiefs heritable; they had withdrawn themselves from the influence of the dukes, so far as they were subject to it. It made no difference, that certain of the great imperial domains were in the hands of bishops; their domains became just as independent as those of the secular dukes. For the most part they were also merely secular nobles, occasionally first after selection as bishops secular persons formally included in the Church by quickly completed ordination as priests, who afterwards as before rode horseback, and had more interest in war and battle, than in the cure of souls of the flock entrusted to them with the crozier. Just as little difference did it also make, that monasteries and foundations acquired secular power like the counts. They, i.e., their priors were now also small princes and had even withdrawn themselves from the ducal power, and had secured their secular possessions as well as the

counties. Besides the nobles also appeared the smaller nobility, composed of the knights, these were placed in the castle by the king, dukes and counts, to defend them and to rule the surrounding domain, by their tendency toward independence, and they also succeeded later in making the castles into seats of power from the power of the prince; the emperor for this existed quite early. Were fortresses a number of cities known

now to make themselves free from princely authority, partly like the great powers of modern times against their superiors, partly by money or other disposal, as alone acquiring such a position, and by means of which they increased the right after another from their prince, as well as their governors and also the king; all these measures variously wished to resist it to extend their power as opposed to superiors, needed money continually in order to find faithful servants to them and to hire mercenaries.

7. Dissolution of the same.

Thus with the first half of the 13th century all conditions were changed. The Roman imperial dignity was extinguished; since as it had developed, it was an emanation of the ecclesiastical power and without any real force, only capable of a nominal existence. In the 13th century the emperor, who was formerly the center of the empire, now was more and more in fruitless contact with the Pope, since they were instead "Roman emperor", yet not as they would be, such as the ideal of the time. The emperor was no longer the center of the empire, but a figurehead, designated him, not what alone the king determined, so regard the emperor as regarding above him, the "monarch", whose authority is a reflection from the "king", as which the nobles

world.

The emperor also was a figurehead, designated him, not what alone the king determined, so regard the emperor as regarding above him, the "monarch", whose authority is a reflection from the "king", as which the nobles the royal power also vanished. About the middle of the 13th century also Germany and France no longer. All Europe consisted of a series of small and partly of the smallest independent states, but of which only those having the names of France and England were of any importance, and these were divided into

counts. Beside the dynasties also appeared the smaller nobility, composed of the soldiers, that were placed in the castles by the king, dukes and counts, to defend them and to rule the surrounding domain, by their tendency toward independence, and they also succeeded later in making the castles into seats free from the power of the princes; the endeavor for this existed quite early. More fortunately a number of cities knew how to make themselves free from princely authority, partly like the other powers by open combat against their superiors, partly by money at their disposal, as alone acquiring such in the realm, and by means of which they purchased one right after another from their princes, as well as their governors and also the kings; all insubordinate vassals wished to receive it to extend their power as opposed to superiors, needed money continually in order to bind faithful servitors to them and to hire mercenaries.

7. Dissolution of the same.

Thus with the first half of the 13th century all conditions were changed. The Roman imperial dignity was extinguished; since as it had developed, it was an emanation of the ecclesiastical power and without any real force, only capable of existence in the closest connection with the Church, while its wearers weakened themselves more and more in fruitless contests with the Popes, since they were indeed "Roman emperors", yet not as they would be, such as the ideal of the time saw the emperor as holder of the secular power and so expressly designated him, not what alone the kings determined, to regard the emperor as standing above them, the "moon", whose splendor is a reflection from the "sun", as which the holders of ecclesiastical authority considered the same ideal, and who had the power to bind and to loose for this and the other world.

In Germany with the imperial dignity, borne by German kings, the royal power also vanished. About the middle of the 13th century also Germany had kings no longer. All Europe consisted of a series of small and partly of the smallest independent states, whose masters occasionally bore the name of king indeed, but of which only those having the names of France and England had any importance, not those states in their present sense, but only a portion of them, since they had actual

While then there and there from the 14th century onwards the royal power again became stronger, the knights gradually lost their power, one indeed could not find a knight in Germany to want the close of the 13th century. The government threatened as seriously against him more, than the office of judge in the counties over the possessions and powers of the grant and life of prince and cities, and while the first new German king was again chosen and established peace and order, he could not usually have no purpose, other than to confirm one already made after an election, the great powers as little as might be, the powerless knights rather more; for the king actually remained scarcely anything more, than what he already possessed as a prince. For if he could still allow himself to be crowned as a Roman emperor of no importance, that he sometimes was an emperor, that he conferred a title and excommunicated a rebel, i.e., an estate left without a master by the conditions, did not substantially increase the power that he exercised as a prince.

6. Development of Cities in the 14th and 15th Centuries.
Important was primarily the development of the conditions, that they left to the cities the right of keeping themselves independent. Certainly there were obtained in contrast with the prince. The right of subjects of the king to fight in a honorable combat could not be lessened. But the advantage was everywhere on their side, for they alone had the money. The number of these cities, and their freedom increased, and a struggle with the 14th century the invention of gunpowder and the introduction of warfare changed the entire nature of war, and because entirely new modes of fortification must be created, still only the cities, as they had the money, could defend themselves from the new conditions, but princes and nobles only so far as cities remained to them, that brought them money. The architecture and first of military architecture these circumstances had powerful influence, and it is not surprising for us to speak fully of it here. We shall see now in spite of the attempts to show them to the new conditions, the castles like the knights gradually lost their importance, now such only remained to the cities, and as the latter employed all means to be best equipped for attack and defense,

power.

While then here and there from the 13 th century onward the royal power again became stronger, the kingdoms gradually enlarged, one indeed could not find a king again in Germany toward the close of the 13 th century. The government agreements scarcely allowed him more, than the office of judge in the contests over the possessions and powers of the great and little princes and cities, and while the first new German king was again chosen and established peace and order, he could actually have no purpose, other than to confirm one usurped right after another, the great persons as little as might be, the harmless inferiors rather more; for the king actually remained scarcely anything more, than what he already possessed as a prince. For if he could still allow himself to be crowned as a Roman emperor of no importance, that he sometimes was an umpire, that he conferred a title and exceptionally a reverted fief, i.e., an estate left without a master by the conditions, did not substantially increase the power that he otherwise held as prince.

3. Development of Cities in the 14 th and 15 th Centuries.

Important was primarily the arrangement of the conditions, that they left to the cities the right of knowing themselves independent. Certainly these were obtained in contests with the princes. The right of subjects of the king to fight in a honorable combat could not be lessened. But the advantage was evermore on their side, for they alone had the money. The number of these cities, that won their freedom increased, and since with the 14 th century the invention of gunpowder and the introduction of muskets changed the entire nature of war, and because entirely new modes of fortification must be created, still only the cities, as they had the money, could derive full benefit from the new conditions, but princes and nobles only so far as cities remained to them, that brought them money. On architecture and first on military architecture these circumstances had powerful influence, and it is not superfluous for us to speak fully of it here. We shall see how in spite of the attempts to adapt them to the new conditions, the castles like knighthood gradually lost their importance, how such only remained to the cities, and as the latter employed all means to be best equipped for attack and defense,

to take as the basis of the system now operating in, that at
the end of the 15th century the castles could be destroyed,
which had lost their importance for the defense of the coun-
try, and were left as a poor security without influence.
That prolonged their existence by expansion and recovery.
There was laid the foundation of a new period of time, in
which a new condition of equilibrium of the different factors
of human society was formed, in which other problems were to
be proposed to be solved. Now the cities transferred them-
selves into the cities, and erected palaces instead of castles.
But the cities gradually lost their importance again
in their favor, as when the princes employed the means of an
entire country; the necessity for a closer combination of all
elements in the formation of great states occurred everywhere.
To describe this time in its geographical operations becomes
the object of the study of the history of the following V
Volume of the "Handbook".

so that at the close of the epoch now occupying us, then at the end of the 15 th century the castles could be destroyed, which had lost their importance for the defense of the country, and were yet seats of a poor nobility without influence, that prolonged their existence by extortion and robbery.

Thus was laid the foundation of a new period of time, in which a new condition of equilibrium of the different factors of human society was formed, in which other problems were to be proposed to architecture. Now the princes transferred themselves into the cities, and erected palaces instead of castles. But the free cities gradually lost their importance again in their favor, on which the princes employed the means of an entire country; the necessity for a closer combination of all elements in the formation of great states occurred evermore. To describe this time in its architectural creations becomes the problem of the author of this Section of the following V Volume of this "Handbook".

Chapter 2. Defense of the Country and the Traffic.

9. Course of the Roads; River Valleys.

If we appreciate the military architecture of the middle ages and desire to recognize the grounds compelling it to pursue the course it actually took, we must first consider the external conditions under which at the beginning of our period, thus about in the 10 th century, traffic throughout the countries generally was possible.

We have before shown that morasses and swamps, wild heaths, widely extended forests, steep hills, abrupt rocky precipices obstructed traffic, and must be avoided. The construction of a regular road, such as the Romans knew, aided the traffic in very slight measure. Likewise the building of bridges caused many difficulties, so that the passage over great rivers did not occur everywhere, and the construction of bridges itself appeared as a religious work pleasing to God, by which man benefited his fellowman. Traffic therefore primarily passed along the river valleys. Gently rising banks in wide valleys even with bad roads made traffic easily possible along the shores, and if these were impassible for a distance, a vessel on the water was required. By a slow ascent the traveler came thus from the seashore to the mountains, where over a pass on the watershed he came into another river valley, that again brought him down to another seashore. If the road had to pass over a river, without the immediate erection of a bridge, then men chose a shallow place, a ford at which passage was easily possible. But also the construction of a bridge was the easier, the less the depth of water where it should be built. Such a ford was a point naturally given, that was occupied in the interest of traffic. (many cities therefore bear in their names the appellation of ford (furt). Other places on the river, whose occupation in the interest of traffic was easily intelligible, were those at which a branch discharged into a main river, where also naturally one route branched from another, and the side river likewise led over the watershed into another river valley. If the river led from the valley up into the mountains, the valley became narrower, the population was small, and so were side valleys everywhere, whose occupation men had found worth the trouble, since they still had spots for cultivation and at least for grazing. The occupants

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to shore of the settled population, from where from villages in order to satisfy the requirements of travelers in addition and how many intermediate points must exist for its benefit. interest of the traffic. This determined by its extent was generally suitable places. To ascertain these was also in the the passage over the mountains was thus limited to certain as by certain could not entirely accounted with the region. that pass as a part of the way, that could only be undertaken the view, so that the wanderer ran a danger of straying. accessible rocks or was covered by a dense forest. These and the passing of a mountain chain, that either exhibited high- were to be developed cities.

the mountainous regions of the north and west, the
to the importance of the place, both for the possible closing
of the road, and for providing a strategic power station in the
valley. In the high mountains, there were not need-
ed such extensive arrangements as in the valley. Where
above as the pass were generally found people, who might serve
in their in peace, who there would find their living by
satisfying the needs of others, the arrangements was not great,
to devote themselves to the service of travelers for
the love of God, there the order of the military discipline
was so extensive one. An enemy was scarcely to be feared there,
re, since an army with all its equipment could not penetrate
there, there scarcely a single man traveled.

of these smaller valleys descended into the larger ones, and by these came into the world traffic. From the larger ones the peddler carried his wares on the backs of pack animals, at last the peddler's back taking them into the most distant mountain valleys.

10. Mountain Passes.

The passing of a mountain chain, that either exhibited inhospitable rocks or was covered by a dense forest, that shut in the view, so that the wanderer ran a danger of straying, must pass as a part of the way, that could only be undertaken by certain bold men entirely acquainted with the region. The passage over the mountains was thus limited to certain entirely suitable places. To garrison these was also in the interest of the traffic. This determined by its extent what and how many intermediate points must exist for its benefit, in order to satisfy the requirements of travelers in addition to those of the settled population, thus where from villages were to be developed cities.

11. Military Garrisons.

All these points must have military garrisons, and indeed the amount of the warlike expenditure was arranged according to the importance of the place, both for the possible closing of the road, and for providing a warlike power against an invading hostile army, that overran the country. In the high mountains, where nature itself does all this, were not needed such extensive arrangements as down in the valley. Where above at the pass were scarcely found people, who might settle there in peace, who there sought and found their living by satisfying the needs of others, the assemblage was not great, and where on a high mountain pass only some pious monks might settle, to devote themselves to the service of travelers for the love of God, there the problem of the military architect was no extensive one. An enemy was scarcely to be feared there, since an army with all its equipment could not penetrate there, where scarcely a single man traveled.

It was otherwise in the broad and low river valleys, where not merely on the shores but also on the water, not only the multitude of peaceful wanderers traveled, but even an army could easily pass forward, the more easily and closely, the wider the extent of the valley. The defense of this could th-

...not occur by a mere obstruction. There must also a
...any exist there, where even a one could penetrate a
...itself. According to the location must exist east-
...with the river. A wide valley with numerous small

...city or city and castle or castle.
...however, places on a map, and carefully examining not for a
...each separate strong point there is a factor of smaller radi-
...on, that it can dominate, how conversely for the security of
...every reason according to its nature, is necessary the miff-
...any fortification of a number of definite points, will be asso-
...of the country, which shows the extent of the
...points is extended, how the natural conditions are chosen, how
...connection is established between them, how the strength of
...and effect possible may be produced.

...lines.
...If in order to show on a single example, how one of the
...possible main traffic routes could be chosen, to connect this
...with our consideration, we could scarcely find a more suitable
...is example than that of the Rhine, which flows through the
...most favored region of Germany, and that from the earliest
...times formed one of the favorite connections between southern
...countries with highly developed civilization and the North.

...one of the well known "Rhine panoramas."
...Ancient civilization had already found necessary the strong
...connection of a series of points by great fortifications, thereby
...favorable positions for the most important cities, that were
...all occupied again in the middle ages, and were newly fortifi-
...ed. To these was added a series of castles, that rose on the
...tops of the hills. From the Netherlands, where the North sea
...penetrated in several arms, onward to Cologne and Bonn and
...vast plains, through which flows the Rhine in many curves,
...stead from ancient times, and had situated a high civilization.
...A series of cities, at whose head Rotterdam and Dordrecht we-
...to ancient outposts, were erected in the regions of the lower
...Rhine, to which were allied those scattered along the entire
...necessity from Dunkirk to Sedan, that dominated all landing

therefore not occur by a mere obstruction. There must also a greater army exist there, where such a one could penetrate a and extend itself. According to the location must exist castles and fortified cities. A main traffic route therefore showed city by city and castle by castle.

Whoever glances on a map, and carefully examines how for each separate strong point there is a larger or smaller region, that it can dominate, how conversely for the security of every region according to its nature, is necessary the military garrisoning of a number of definite points, will be astonished by the practical views with which the network of strong points is arranged, how the mutual positions are chosen, how connection is established between them, how the strength of each one is given with regard to the whole, so that the highest effect possible may be produced.

12. Example of a main Traffic Route; lower Valley of the Rhine.

If in order to show on a single example, how one of the European main traffic routes could be chosen, to connect this with our consideration, we could scarcely find a more suitable example than that of the Rhine, which flows through the most favored region of Germany, and that from the earliest times formed one of the favorite connections between southern countries with highly developed civilization and the North.

For this consideration, we beg our readers to take in hand one of the well known "Rhine panoramas."

Antique civilization had already found necessary the strong occupation of a series of points by great garrisons, thereby laying foundations for the most important cities, that were all occupied again in the middle ages, and were newly fortified. To these was added a series of castles, that rose on the tops of the hills. From the Netherlands, where the North sea penetrated in several arms, onward to Cologne and Bonn are vast plains, through which flows the Rhine in many curves, plains that to the shores of the deep sea were densely populated from ancient times, and had attained a high civilization. A series of cities, at whose head Rotterdam and Dordrecht were mighty bulwarks, were erected in the regions of the lower Rhine, to which were allied those scattered along the entire seacoast from Dunkirk to Emden, that dominated all landing

...in the great Westphalian plain, in which also lies a
one north of the Rhine. Yet the waters, from which men were
the people first, formed the material means serving for degen-
...and, when situated to the low hills, was land as far as
...as to be inaccessible, unless navigation was possible
over the flooded region. As the proper key to the Rhine was a
rav. toward Nuremberg, located on a low rise on the bank of the
...from which the route passed to the Rhine. Still the Rh-
the province could be reached in great ways; but the pass was
always the river itself and its shores, that was dominated by
the cities of Osnabrück, Hameln, Hildesheim, and Bielefeld.
...from other important smaller ones, as far as
...to which further above was added the
...of Cologne, which were distant from the banks
on both sides a series of cities protected the different pas-
...the Rhine valley commencing a life-
...Cologne was a highly fortified camp, whose citadel
...an army represented an important fortress, and to which two
...of the entire vicinity could be drawn, so that it was now
...possible, supported by that camp, to oppose a military
...to the enemy in the valley, and it also stood there as
...that without overlooking and taking Cologne, and w-
...the army therein enclosed in his rear, could proceed to-
...the Rhine valley, at whose proper entrance was
...the Rhine valley, and it was difficult to pass it
...the Rhine, before the valley became narrower.
...beyond from the hills were castles, which fortified the fi-
...at the end of the Rhine to Cologne. On the bank of the Rh-
...lay the little fortified cities of Münster and Osnabrück.
...of Münster and Osnabrück, while the lands of Bonn-
...and Osnabrück in the middle of the Rhine stretched
...of support, that all consisted so that the enemy was
...the Rhine valley, and it was difficult to pass it
...to Osnabrück from the left bank of the Rhine was im-
...possible, the traffic being turned to the right bank, so far
...as was carried on by water, where the small cities of Bielefeld
...and Bielefeld limited the flat land lying before the hills, but
...the mouths of the side valleys were closed by Haspen and Bielefeld.

places in the great Netherlandish plain, in which also lie the mouths of the Rhine. Yet the waters, from which men wrung the arable land, formed the material means serving for defense, when withdrawing to the low hills, the land was so far flooded as to be inaccessible, unless navigation was possible over the flooded region. As the proper key to the Rhine we may regard Nymwegen, located on a low rise on the bank of the Rhine, which was connected with Breda, Herzogenbush, Arnheim, etc., from which the route passed to the Rhine. Still the Rhine province could be reached in other ways; but the best was always the river itself and its shore, that was dominated by the cities of Cleves, Emmerich, Rees, Xanten, Wesel and Duisburg, aside from other intermediate smaller ones, as far as Düsseldorf and Neuss, to which farther above was added the mighty fortress of Cologne, while more distant from the banks on both sides a series of cities protected the different roads, that led to Cologne and the Rhine valley commencing a little above. Cologne was a mighty fortified camp, whose citizens alone represented an important garrison, and to which those of the entire vicinity could be drawn, so that it was not merely possible, supported by that camp, to oppose a mighty army to the enemy in the valley, but it also stood there so commanding, that without besieging and taking Cologne, and with the army therein enclosed in his rear, could proceed farther against the Rhine valley, at whose proper entrance was also built a fortress, the city of Bonn opposite the mouth of the Sieg, before the valley became narrower.

Beyond Bonn the hills bore castles, which dominated the flat shores of the Rhine to Rolandseck. On the bank of the Rhine lay the little fortified cities of Mehlen and Oberwinter, Rolandseck opposite the mighty Drachenfels, with the little cities of Königswinter and Honnef, while the islands of Nonnenwerth and Grafenwerth in the middle of the Rhine afforded points of support, that all combined so that the enemy must first overpower all, until he could ascend the valley farther. Up to Remagen indeed then the left bank of the Rhine was impassible, the traffic being turned to the right bank, so far as not carried on by water, where the small cities of Unkel and Espel limited the flat land lying before the hills, but the mouths of two side valleys were closed by Kasbach and Linz,

between which lay the castle of Ockenfels on the hill. Where opposite Linz the Ahr breaks forth from the mountains, it had flooded a small plain and compelled the Rhine to withdraw to the other side close to the foot of the hill. From Linz to H Hönnigen therefore the right bank afforded no route. The castle of Dattenburg had served to strengthen Linz, while Argenfels dominated Hönnigen. The connecting route extended through the hills near Leubsdorf, Argendorf and other villages, connected Linz with Hönnigen, and indeed could aid the defense; but a hostile army could scarcely consider going around the bank of the Rhine in this way; it must move directly forward through the plain, which the Ahr had flooded on the left bank, at the lower end of which lay Remagen with Nieder-Breisig at the upper, while on the right bank of the Ahr, Sinzig rose at the foot of the hill, so that this entire plain lay in the power of these three cities, of which Nieder-Breisig was further protected by castle Rheineck. A narrow road remained at the foot of the hill on the left bank upwards through Nippes, Fornich and Namedy to Andernach, while on the right bank of the Rhine a similar one on the broad plain led upward to Rheinbrohl, where the mountain again interrupted the road and again projected close to the river, that was dominated by castle Hammerstein and the villages of Nieder- and Ober-Hammerstein lying at its base, from which the road passed up the Rhine by Landsdorf, Fahr and Irlich to the mouth of the Wied river. Andernach had to protect again a considerable plain on the left bank of the Rhine.

Relatively little fortified now appeared a considerable extent on both banks; for neither Neuwied on the right nor Weisenthurm on the left extends back into the early period. We have Engers on the right bank, opposite on the left being Urwitz, Kalten-Engers and Sebastian-Engers, little villages scarcely important enough to protect sufficiently the wide bank, then to the mouth of the Moselle were also Kesselheim and Wallenheim, so to Coblenz on the right side of the Moselle, that also had a bridge-head on the left side of the Moselle, fell the problem of protecting the broad shore to Andernach. On the right bank, where the hills of Engers came close together, there lay at a small distance castle Sayn, and still farther up the Rhine were Bendorf and Vallendar. Doubtless a fortress

also stood on the island of Niederweier. Opposite Godesburg was
the main chief fortress of the Elector. At the foot of
the hill that bore this fortress, the way led along the Rhine
beyond Pfalzgraben, Honneburg and Niederweier to the town
disappearing there, on whose left bank was situated the fort-
ress of Lennep on a lofty rock; at its foot on the Rhine de-
scended the plain to Andach. On the left bank above Godesburg, which dom-
inated the plain to Andach, also the access to the Moselle
valley and the important connection of travel with the Rhine.
The hills again approached the river, that centuries before
had had a wider bed than today, so that no road but the one
by a border path led a piece beyond castle Godesburg, which
it reached the main river. On the right side the val-
ley also became narrower; at the foot of castle Marx the first
city of the Rhine also found room. For some time the hill
came close to the river. Then two great protecting hills, one
extending from each bank, forced the Rhine into a great curve,
so that it must now backward a short piece, nearly by a second
curve. At this point the river was again widened, and on these some
little cities found place; lowest and closest to the river is
Godesburg, then still on the left bank are Niederweier and Godes-
burg, on the right bank were Gatterbach and Witten, the latter
occupying the apex of the protecting hill and being dominated
by castle Gatterbach, opposite the important city of Bonn.
A further distance upwards to castle Witten and Hattenstein, the
rocky precipices of the river rise directly from the water of
the Rhine, which they seem to take considerable curves, into
those depths so much more has been wanted, that small cities
found room everywhere. Thus appears on the right bank the first
city of Godesburg, above this being castle Gatterbach and the
Gatterbach, then on the left bank are Gatterbach and Hattenstein, on
the right Kessel and Witten, the latter dominated by castle
Witten (the house). Then on the left bank appears castle
Hattenstein, below it comes the small city of St. Gode-
froid, above it is St. Godefroid, above on the hill is castle Hatten-
stein (the Cat). Still then stands again along the bank
Gatterbach, above it Hattenstein and castle Gatterbach, then Ba-
nborn and the fortress of Gatterbach. Opposite and across
the two little cities last named lies Godesburg with castle Godes-

also stood on the island of Niederwerth. Opposite Coblenz was the mighty chief fortress of Ehrenbreitstein. At the foot of the hill that bore this fortress, the way led along the Rhine beyond Pfaffendorf, Horchheim and Wider-fahnstein to the Lohn discharging there, on whose left bank was enthroned the fortress of Lenneck on a lofty rock, at its foot on the Rhine being OberLahnstein. On the left bank above Coblenz, which dominated the plain to Andernach, also the access to the Moselle valley and the important connection of Treves with the Rhine, the hills again approached the river, that centuries before indeed had a wider bed than today, so that no road but at most a border path led a piece beyond castle Stolzenfels, until it reached the again wider river. On the right side the valley also became narrower; at the foot of castle Marx the little city of Braubach also found room. For also here the hill came close to the river. Then two great projecting hills, one extending from each bank, forced the Rhine into a great curve, so that it must flow backward a good piece, until by a second curve it could again pursue its former direction. Since then at certain places the flat shore was washed in, on these some little cities found place; lowest and opposite Braubach is Rhenese, then still on the left bank are Niederspay and Oberspay, on the right bank being Osterspays and Wilsen, the latter occupying the apex of the projecting hill and being dominated by castle Liebeneck, opposite the important city of Boppard. A further distance upwards to about Bingen and Rüdesheim, the rocky precipices of the hills rise directly from the water of the Rhine, which they cause to make considerable curves, into whose depths so much shore has been washed, that small cities found room everywhere. Thus appears on the right bank the little city of Camp, above this being castles Sternberg and Liebenstein, then on the left bank are Salzig and Hirzenach, on the right Kestert and Wellmich, the latter dominated by castle Thurnberg. (The Mouse). Then on the left bank appears castle Rheinfels, below it being the small city of S. Goar, opposite it is S. Goarshausen, above on the hill is castle Katzenellenbogen (the Cat). Left then stands again along the bank Oberwesel, above it Niederburg and castle Schönbürg, then Bacharach and the fortress of Stanleck. Opposite and between the two little cities last named lies Gaub with castle Guten-

Gutenfels and the fortified palace in the midst of the Rhine. Farther up rise on the right bank only the little cities of Lorchhausen and Lorch, between them castle Nollingen, while the left bank above Bacharach shows castle Fürstenberg, castle Heimburg, the little city of Nieder-Heimburg, castle Sonn-eck, the small city of Trechtlingshausen, then castles Falkenberg and Rheinstein, when directly before Bingen, by the flowing in of the Nahe, the valley of the Nahe branches off from the Rhine valley. Before the mouth of the Nahe lies the Mouse Tower on an island; on the projecting hill opposite the mouth of the Nahe are placed above castle Rossel, below on the Rhine being the little city of Assmannshausen. The entire series of these fortified points are unimportant in detail; on their combination and on the possibility of acting together is based their power. Therefore it can scarcely be doubted, that a all of them extend back into the early time. It does not seem thus with castle Ehrenfels located on the hill slope of the right bank, that must have been added rather late as an extension of the not very strong walls on the same place.

From Bingen onward, above which city is enthroned fortress Klopp, the left bank widens again, while also the hills recede somewhat on the right bank. Thus on the left on a considerable plane are located the cities of Kempten, then Frei-Weinheim, Heidesheim, Budenheim, Mombach, behind which rises an isolated chain of hills. Yet this series of hills is easy to go around, the road behind therefore being again secured by the little cities of Ober- and Nieder-Ingelheim, about half way between Bingen and Mentz, that must likewise be fortified by forts, since old Mentz was limited to the plain. The right bank shows little cities and those at quite small distances apart, first Rüdesheim, then Geisenheim, Winkel, Oestrich, Mittelheim, Hattenheim, Eltville, Niederwalluf, Schierstein, Eiberich (Mosbach), then Castell opposite Mentz, and Kostheim already on the bank of the Main. Behind these cities the hills extend back from the water, their heights partly fortified by castles, so far as they still dominate the Rhine route. Behind is the Johannisberg, behind Winkel is the house Mumm, behind Mittelheim and Oestrich is castle Vollrath, behind Eltville, castle Scharfenstein, and at its base is the little city of Kiderich. What now succeeds even belongs to the safety of

the valley of the river, and when the rain had subsided was
as to make it certainly navigable, otherwise one of the main in-
termediate connecting routes to the east, in spite of the many

difficulties, the river was not only navigable but also a main
highway, then it became the main line of communication of the land in-
terior, the river being the main artery of the country, and
the directly dominated the river. An enemy desiring to reach
the interior of the country, would only have needed to leave the
coast and march across the river from village to village,
unless obstructions were there opposed to him. But we do not
have in any wise to regard the villages as so entirely open.
Aside from that in each stood a fortified house of the posses-
sion of or of his officer, the possessor and the separate con-
struction of the house, the house being the main obstacle to the in-
terior, that an advance was only possible at the place, and
were even designated for fortification. At the time when monumental
fortifications in stone formed the exception, that many a mas-
sive stone and wood house as good as well fortified, and
even the dwellings and fields of his peasants, as those
living on the river to secure their city. The houses were
very still, the houses, now in addition to the still exist-
ing villages, now by construction of all kinds in addition to
the nature of the river, brick, stone, bamboo, wet near
the, etc., the houses were indeed made impossible, so that
only those acquainted with the locality could find those open
places or within neighbors traveled.

To a sort of participation must be given attention, since ves-
sels will remain. This is the so-called "barriers", trees
and other things that are placed in the river, that for long
distances make a region inaccessible. Even if it were not im-
possible to make a way by cutting, this held back an enemy
for at least some time, and where such obstructions were pre-
sented successively, where those knowing the locality regard-
ed themselves able to frustrate, to enter to places at which
with less success a vanguard or some advanced soldiers could
be overpowered, or at least the march of an enemy could be so
delayed, that their own soldiers could be gradually withdrawn,

the valley of the Main, and when the Main had sufficient water to make it certainly navigable, offered one of the most important connecting routes to the East, in spite of the many curvatures.

If we so far have only considered the small cities and castles, then in nowise was the entire remainder of the land left defenseless. We have indicated just those strong points, that directly dominated the road. An enemy desiring to penetrate into the country, would only have needed to leave the route and march across the plains from village to village, unless obstructions were there opposed to him. But we do not have in any wise to regard the villages as so entirely open. Aside from that in each stood a fortified house of the possessor or of his officer, the boundaries and the separate courts were enclosed by hedges, walls, ditches, etc., that were partly right strong and opposed such obstructions to the invaders, that an advance was only possible at the places, that were even designated for traffic. At the time when monumental fortifications in stone formed the exception, that many a master made here his strong house as good and well fortified, and even the dwellings and fields of his peasants, as those lying on the street to secure their city. The honored reader may still reflect further, how in addition to the still existing villages, how by obstacles of all kinds in addition to what nature had done by river, brook, hills, swamps, wet heaths, etc., the plains were indeed made impassible, so that only those acquainted with the locality could find those open places on which neighbors traveled.

To a sort of barricading must be give attention, since vestiges still remain. This is the so-called "barriers", trees interlaid and trimmed like our modern living hedges, forming impenetrable hedges of considerable strength, that for long distances made a region inaccessible. Even if it were not impossible to make a way by cutting, this held back an enemy for at least much time, and where such obstructions were presented successively, where those knowing the locality regarded themselves able to irritate, to entice to places at which with less strength a vanguard or some advanced soldiers could be overpowered, or at least the march of an enemy could be so delayed, that their own soldiers could be gradually withdrawn,

and it was possible, and that help could be drawn from a considerable distance and an army be organized, before the enemy had made particular progress. But therefore the devastation of the country was of equal importance with the removal of the obstructions, and it is nowise a mere march of ferocity, but a necessity required by the conditions, that led to the fact, that devastation played so great a part in the conduct of the wars of the middle ages, since even the enemy could only advance by "singeing and burning".

As the particular importance of the Rhine route began at Cologne, so that this city as an advanced post formed a strong camp for a greater garrison, that was in condition to protect the plain to Bonn before the entrance into the Rhine valley, then at the lower end of the valley of the Rhine opposite Bingen, Mentz had a similar problem; for already from Bingen the valley ever widened, and from Mentz up to the place at which the Neckar by its junction with the Rhine makes this a great river, but which passes through the country in great curves, the plain of the Rhine is a broad region subject to floods, along the sides extending two independent roads, therefore at a considerable distance from each other, the defense of each of which was separately provided, and that only near Oggersheim and Mannheim again approached so nearly, that after the road through the Neckar valley branched off, and obtained independent importance from Heidelberg, a combination was to be considered. Meanwhile the right bank of the Rhine valley is so broad, that no necessity existed there to carry the traffic route close to the Rhine. To it approached the hill road, that from Frankfort led by Heidelberg into the great plain of the shore of the Rhine. Thus the ground receded on the right bank, and the problem of defending the line of the Rhine was referred exclusively to the left bank. Then we also find there above Mentz and adjoining the heights of that city, where the hills approach the Rhine is also a series of smaller cities, the most important of which is Oppenheim, after which the hills again recede, partly directly on the Rhine, partly in the plain behind it to Worms, then farther upward are Spies, Lauterburg, Strasburg still farther above and finally Basle. The plain behind these cities as far as the Haardt and the Vosges has its own network of fortresses.

Consideration of the right bank above Mentz indeed shows us also certain strong points there, of which the most important may be Stockheim, Gernsheim and Lampertheim, while the proper traffic route from Frankfort through Darmstadt, Bensheim, Heppenheim, led to Weinheim near Heidelberg on the Neckar, between which city and Mannheim and located in the middle, Ludenburg again defended the passage over the Neckar. The farther course through the Rhine plain upwards now passed at the feet of the hills, and in its measures for defense no longer bears the character of protection of a river valley, but rather that of a great plain extending at the feet of the hills. First from Basle, where the Rhine comes from the East at a right angle, again occurs a proper defense of the river valley as far as Lake Constance. But the traffic through this part of the Rhine valley formed the continuation of the traffic route of the left bank of the Rhine, aside from other travel routes, while the continuation of the traffic route at the feet of the hills on the right side of the Rhine extended from Freiburg across the Black Forest to Lake Constance.

Switzerland with its giant mountains formed a powerful obstruction to traffic, and to traverse its Alpine passes was a great undertaking for the merchant, who desired in peace to exchange the products of the North and the South. But still a far greater undertaking was that so often imposed on the German kings to march over the Alps to Italy, and if an invasion failed, to fight through homeward again, and justly the ancient traditions therefore already refer to the many footsteps marching toward Italy and the few returning soldiers.

We have given the measures for defense of the Rhine valley as an example, how a river valley was secured. The defense of the Alps would be a second example, that we could study with the reader; as a third might be regarded one of the routes, that led from the Alps through upper Italy into the valley of the Po; but aside from the fact, that we always find the same ground principles, the small space assigned to the author forbids considering more than one example. Therefore we turn to the examination of the details, and we see how military architecture realized its problem therein, and how it was developed.

temporary conditions.

When the great network of fortresses was erected for the first time of the country, we are little instructed, since later on nearly all castles and city fortifications were rebuilt. The two traditions connected therewith, that of the Romans, and that of the ancient German military architecture. We must first remark here, that a great number of remains of the city fortifications in Germany are attributed by the people and the other writers to Roman origin, but almost without exception, they have nothing to do with the Romans, but are even medieval, and that most of Roman military architecture is still remains among us, mostly consists of relatively few ruins, so that we must be careful to observe, if we still have a few ruins of masonry above ground, and with great labor excavations can be made. For the present part these still remain- ing Roman structures are the ruins of each work, that were out of use in the middle ages; for where a fortress of the middle period must serve further, then must it be suited to the new conditions. It was rebuilt again and again, so that nothing of the old ever remained. While the Roman castrum (castrum) served exclusively for military purposes, and the population with its dwellings and villas, temples, baths and even theatres were placed outside it, the medieval city placed the entire population inside its walls. Now Rome itself indeed and many other great Roman cities in the middle period were surrounded by massive walls. Yet in Germany this does not appear to have come, and thus we have entirely few remains of Roman city walls in the ancient cities erected on a Roman foundation, since even the Roman castrum was too small for a medieval city. But still less are the facts rightly given by these authors, who desire to see in our castles, particularly in their nucleus, Roman towers or other Roman remains. It may be stated with tolerable certainty, that the Romans in Germany adhered the most possible to laid out fortresses on steep hills and high rocks, so that access was difficult. But indeed the ancient population of

Chapter 3. Plans of Castles and Cities in their contemporary Conditions.

13. Earlier Fortifications.

On many details in the military architecture of the time, when the great network of fortresses was erected for the defense of the country, we are little instructed, since later on nearly all castles and city fortifications were rebuilt. There are two traditions connected therewith, that of the Roman, and that of the ancient German military architecture. We must first remark here, that a great number of remains of the older fortifications in Germany are attributed by the people and the older writers to Roman origin, but almost without exception, they have nothing to do with the Romans, but are even mediaeval, and that what of Roman military architecture actually remains among us, mostly consists of relatively few ruins, so that we must be quite fortunate, if we still have a few ruins of masonry above ground, and with great labor establish this or that detail. For the greatest part these still remaining Roman structures are the ruins of such works, that were out of use in the middle ages; for where a fortress of the Roman period must serve further, then must it be suited to the new conditions. It was rebuilt again and again, so that nothing of the old even remained. While the Roman castle (*castrum*) served exclusively for military purposes, and the peaceful population with its dwellings and villas, temples, baths and even theatres were grouped outside it, the mediaeval city gathered the entire peaceful people within its walls. Now Rome itself indeed and many other great Roman cities in the antique period were surrounded by massive walls. Yet in Germany this does not appear to have come, and thus we have particularly few remains of Roman city walls in the ancient cities erected on a Roman foundation, since even the Roman castle was too small for a mediaeval city. But still less are the facts rightly given by those authors, who desire to see in our castles, particularly in their nucleus, Roman towers or other Roman remains.² It may be stated with tolerable certainty, that the Romans in Germany adhered the most possible to the plains, went sometimes to broad-topped hills, but never laid out fortresses on steep hills and high rocks, to which access was difficult. But indeed the ancient population of

the country had before witnesses to the peaks and ridges of the hills, if these threatened, occasional observation and their possession denied walls, denoted these walls existed to the extreme in case of need, and from them always proceeded at the enemy, and at the proper time attacked them, that was sit below in the land. But it is as in Germany were conditions in France and England; likewise in Spain the Romans were only proceed otherwise. Even in Italy is the origin of the mountain castle everywhere to be traced down to the middle ages, and referred to the influence of the Germanic races, who had settled there.

Note 1. p. 17. Thus for example, the entire beautiful collection book of G. H. Vries von Hockfelden (Geschichte der mittelalterlichen Architektur in Deutschland, etc., Stuttgart, 1888), is only to be used with the most extreme caution, since the dependence of Roman origin for so many castles, even the dependence for the consideration of the others is displayed.

14. Walled Enclosures.

In Germany, France and England is yet a series of primitive walled enclosures in part of considerable extent. Others go back to the early period of our history. Circular or oval, arranged as far as permitted by the tops of hills, they could receive a large number of people. About such a nucleus was placed a larger and wider enclosure in part following the shape of the hill, and in part straight lines. Everywhere clearly seeing the twofold purpose of receiving the fugitives and the enemy, and at the same time making all those places inaccessible, that might be useful to the enemy, by including within the circle of defense. Earth and stones more or less regularly formed the materials when the wall was constructed. Excavated ditches furnished them and at the same time gave greater height to the wall. Where rocky precipices existed, they served; where nature had not done enough, and helped it out; the level places were regulated, the resulting earth and stone removed, as well as that taken from the rock, was added to the walls, so that it was not necessary to bring materials from a great distance for building the enclosure. The one factor that covered the hills furnished timber. This was now still utilized to a considerable extent in forests

the country had before withdrawn to the peaks and ridges of the hills, if danger threatened, concealing themselves and their possessions behind walls, defended these walled castles to the extreme in case of need, but from them always threatened the enemy, and at the proper time attacked those, that dwelt below in the land. Entirely as in Germany were conditions in France and England; Likewise in Spain the Romans must scarcely proceed otherwise. Even in Italy is the origin of the mountain castle everywhere to be brought down to the middle ages, and referred to the influence of the Germanic races, who had settled there.

Note 2. p. 17. Thus for example, the entire beautifully conceived book of G. H. Krieg von Hochfelden (*Geschichte der Militär Architektur in Deutschland*, etc., Stuttgart, 1859), is only to be used with the most extreme caution, since by the acceptance of Roman origin for so many castles, even the basis for the consideration of the others is displaced.

14. Walled Enclosures.

In Germany, France and England is yet a series of prehistoric walled enclosures in part of considerable extent. Others go back to the early period of our history. Circular or oval, arranged as far as permitted by the tops of hills, they could receive a large number of people. About such a nucleus was placed a larger and wider enclosure in part following the slope of the hill at one side, partly surrounding the nucleus, everywhere clearly serving the twofold purpose of receiving the greatest possible number of people, then also men for defense, and at the same time making all those places inaccessible, that might be useful to the enemy, by including within the circle of defense. Earth and stones more or less regularly squared formed the materials with which the wall was constructed. Excavated ditches furnished them and at the same time gave greater height to the wall. Where rocky precipices existed, they served; where nature had not done enough, art helped it out; the level places were regulated, the resulting earth and stone removed, as well as that taken from the rock, were added to the walls, so that it was not necessary to bring materials from a great distance for building the enclosure. But the forests that covered the hills furnished timber. This was now still utilized to a considerable extent in fortress

a more acute bond, when made of stone blocks in part of small size, timbers of small size were regularly inserted between the stones, laid in courses without mortar, down as low as the level of the wall as in short pieces in its thickness, and thus by the timbers between the wall and interior side stones was produced an effect, like an attached room in rear far masonry. In the architectural carried out use of wood in masonry first appears to have been omitted, although we also

purpose in structure of the middle ages, and besides the crown of the wall mostly had masonry. We there have to think first of the treatment of the wall and of masonry and of masonry. Yet if we consider to what quick destruction by climate, by fire, by decay, by war, by the crown of the wall, then we cannot doubt, that the crown of the wall soon received protection by a roof, and since there under some conditions in a possible attack could not be quickly removed, then most we indeed conceive the final defensive passage of wood with covered roofs as a necessary early time. Also of wood must we consider all buildings erected, that served for shelter of the permanent inhabitants, as well as those, who lived with their houses as such buildings. We further should not doubt this, when we see, that the stone walls were so constructed as to require the enemy to take several successive assaults, before he was at last in possession of the entire fortress, that also rows of battlements constructed the access, and further enclosures of the whole, or formed easily and

15. Masonry Workmanship.

This mode of construction in dry stone, earth and wood, was long retained and extended deep into the middle ages, through whose entire course we meet with it. It is not our purpose to develop here the peculiarities of this medieval earth construction, to examine more closely and to state the differences in plan and execution, how the walled castles of the present again from those of the late middle ages. -- So much as necessary will be given later. But besides this mode of earth

construction.

In the prehistoric period in order to give the coursed walls a more secure bond, when made of stone blocks in part of small size, timbers of small size were regularly inserted between the stones laid in courses without mortar, both as long sticks lengthwise the wall as in short pieces in its thickness, and thus by the timbers between the small and irregular split stones was produced an effect, like an arranged bond in regular masonry. In the historical period this use of wood in masonry first appears to have been omitted, although we also frequently meet with the use of separate timbers for similar purposes in structures of the middle ages. But besides the crown of the wall mostly had woodwork. We there have to think first of the breastworks made of palisades and of wattled work. Yet if we consider to what quick destruction by climatic influences such masonry was exposed, if it were not especially protected, then we cannot doubt, that the crown of the wall soon received protection by a roof, and since there under some conditions in a hostile attack could not be quickly removed, then must we indeed conceive the formal defensive passages of wood with covered roofs at a tolerably early time. Also of wood must we consider all buildings erected, that served for shelter of the permanent inhabitants, as well as those, who fled with their goods to such refuges. We further should not doubt this, when we see, that the stone walls were so constructed as to require the enemy to take several successive lines, before he was at last in possession of the entire fortress, that also rows of palisades obstructed the access, and further enclosures of the whole, or formed easily handled separate parts, particularly the gates.

15. Masonry Fortifications.

This mode of construction in dry stone, earth and wood, was long retained and extended deep into the middle ages, through whose entire course we meet with it. It is not our problem to develop here the peculiarities of this mediaeval earth construction, to examine more closely and to state the differences in plan and execution, how the walled castles of the prehistoric period differ from those of the Carlovingian, and these again from those of the late middle ages. ³ -- So much as necessary will be given later. But besides this mode of earth

and good construction. There was also the solid masonry
 east on Roman tradition, even if it was also more generally
 located the exception. We have illustrated in the preceding
 Volume of this Handbook (I at last, c. 194) the peculiarly
 decorated masonry of a Frankish tower in Cologne, to which
 reference may be made here, and that shows us, how the Frank
 have restored the Roman walls with the round towers in their
 manner. Extensive remains of Roman military architecture are
 preserved in Garcazone; these walls were rebuilt on Roman
 foundations by the Visigoths, but certainly a later restora-
 tion has again changed many things. According to a document
 of the emperor Louis II of the year 874, the city of Piacenza
 had a double enclosure with towers and fortified gates; it
 was not in the 10th century but towers and 40 castles;
 Milan had walls 12 ft. thick, 800 towers and several outworks.
 In Germany, Hildegard was fortified about the year 998 with
 walls and towers; it was also 1000 strong. Hildegard had
 the walls of Worms. Likewise many castles in southeast
 Germany -- we recall the castle near Weizsäcker on the Rhine-
 and Saale -- already about that time received stone walls. Y
 Yet must we think of scarcely any works at the beginning of
 the 11th century, of masonry of none but large stones.
 Note 2. We refer for this to the very appropriate introduction
 of G. Kähler: Die Entwicklung des Festbaus und der Krieg-
 (p. 241-246)
 In Volume 2, unfortunately without illustrations, there is
 given a very instructive description of the military architec-
 ture of the middle ages, that has served us as a guide. The
 topic here considered is particularly developed on p. 249, etc.
 Note 3. Völkel's Die Kunst in Volume 1 of *Archiv der
 Kommission der monumenten historischen, careful drawings and a
 also attempts of their restoration. -- Also see his *Deutungs-
 der Personen de Architektur Proben, etc.* (19 vols.
 Berlin, 1828-1868). In different places, especially in Volume
 1, under the art. "Architectur militäre." (p. 245 et seq.).
 Note 4. See Kähler, L. A. *Entwicklung des Festbaus* (1891)
 Note 5. See Kähler, Volume 2, p. 246.*

and wood construction, there yet rises high the solid masonry based on Roman tradition, even if it was also more generally employed in Italy and southern France. In the North it still formed the exception. We have illustrated in the preceding Volume of this Handbook (1 st half, p. 124) the peculiarly decorated masonry of a Frankish tower in Cologne, to which reference may be made here, and that shows us, how the Franks have restored the Roman walls with the round towers in their manner. Extensive remains of German military architecture are preserved in Carcassonne, whose walls were rebuilt on Roman foundations by the Visigoths, that certainly a later restoration has again changed many things.⁴ According to a document of the emperor Louis II of the year 874, the city of Piacenza had a doubled enclosure with towers and fortified gates;⁵ R Rome had in the 10 th century 381 towers and 46 castles;⁶ Milan had walls 12 ft. thick, 300 towers and several outworks.⁶ In Germany, Hildesheim was fortified after the year 993 with walls and towers;⁶ about the year 1000 bishop Burkhard rebuilt the walls of Worms. Likewise many castles in southeast Germany -- we recall the Salzburg near Neustadt on the Frankish Saale -- already about that time received stone walls. Yet must we think of scarcely any works at the beginning of the 11 th century, of masonry of none too large stones.

Note 3. We refer for this to the very appropriate statement of G. Köhler; *Die Entwicklung des Kriegswesens und der Kriegsführung in der Ritterzeit*, etc., (Breslau. 1886 - 1887), where (p. 341-510) in Volume 3, unfortunately without illustrations, there is given a very instructive description of the military architecture of the middle ages, that has served us as a guide. The topic here considered is particularly developed on p. 379, etc.

Note 4. Viollet-le-Duc gives in Volume 4 of *Archives de la Commission des monuments historiques*, careful drawings and also attempts of their restoration. -- Also see his *Dictionnaire raisonnee de l'Architecture Francoise*, etc. (10 vols. Paris. 1858-1868)., in different places, especially in Volume 1, under the Art. "Architecture militaire." (p. 345 et seq).

Note 5. See Muratori. *L. A. Antiquitates Italicae mediæ ævi*. Vol. 2. p. 454. (Milan. 1739).

Note 6. See Köhler. Volume 3. p. 346.

16. Castle and City Fortifications.

It lay in the nature of feudalism, according to which the master placed the sources of his power in the hands of others, that the intimate union must be gradually loosened; the power of the kings and of the emperor diminished. The 11th and 12th centuries compose the period of progressive and embittered contests for the freedom of the feudal masters and the preservation of power over vassals. This ended about the close of the 12th century with the complete independence of the latter. But thereby also the combined action of all powers for the common defense of the country came to an end; every fortress, whether city or castle, was the more left to itself, the more independent its possessor had made himself. For the development of military architecture, this was not unfavorable; for now the measures sufficed no longer, that were based on the united action of all. Each master sought to make his castle as strong as possible, and to secure to himself as many of these as possible. Particularly the emperor and the kings could only secure to themselves the remains of their power by a great number of castles, that they themselves possessed, and not their dukes. For example, the number of the Hohenstaufen castles is given as 350. Thus the 12th century is then the classical period of castle building. For the aspiring cities, who likewise sought to obtain their independence, the masters made great difficulties in regard to fortifications; they were satisfied by a strong castle dominating the city, thereby ensuring their interests, and forbade the city itself to erect walls, so that only gradually could the cities succeed in fortifying themselves in a comprehensive way, and that the classical period of the fortification of cities follows about 200 years later than that of castles.

Chapter 4. Plans of Cities.

17. Nature of Fortifications of Cities.

In general no special difference is to be made between the fortifications of cities and of castles. ⁷ Both, so far as possible, carried a wall around a certain area, within which the colonists built for themselves houses and other structures. The larger were termed cities and the smaller castles, to which in the beginning of our period were added the monasteries as a third, that in their isolated situation must likewise be surrounded by a wall, which could be defended, until later they were themselves built in the cities. The wall was made as strong as possible, and the gates were fortified the best possible. Where the walls were easily accessible, and an undermining of them might be feared, they were strengthened by inserted towers; where this occurred, there was placed before the innermost line of defense a second, and if possible a third, and there were further erected outworks, particularly before the gates. Only one principal difference resulted from the peaceful purpose of the city. While the castle, whenever possible, had but a single and not very convenient entrance, since besides united friends and especially invited guests, no visits to it would occur, the cities must have a series of easily passed and convenient entrances, since they should serve the most extensive traffic possible. Traffic, which must be excluded from the castle, must be led into the city. Not before the city, but within it were necessary travelers and merchants' goods. There the proper purchasers should buy, and only that should be carried farther, after they had chosen, which they did not need. Foreign sailors and wagoners, who brought the goods, were required to leave them, in order to give opportunity to the wagoners and sailors of the city to earn money by transporting them farther. The inhabitants of the vicinity should come to buy, and richly loaded with the products of the artisans of the city and the foreign goods offered for sale there, again depart. The roads, that must pass far away from the castle, must extend through the city. The preservation of the safety of the city was thereby made substantially more difficult in contrast with a castle; meantime it belonged therefore to the duties of a good city government, to watch the more attentively and carefully over

this traffic, and to drive forth doubtful fellows, who had slipped in, or to imprison them, to close the gates at the proper time and to interrupt the traffic, as soon as this was necessary. Other arrangements for the defense of a city, than those made by the master of a castle, were properly not possible. If many city fortifications actually exhibit a different external appearance than the castles, this only consists in that most city fortifications belong to a later period than the castles, and that cities, especially in the later time, had at command more means than the poor master of a castle, so that it could arrange its works larger and with richer external decoration, than the possessor of a castle.

Note 7. Therefore to avoid repetitions, in describing the city architecture, we must omit to go into details, that indeed are also true for the city, but are better treated in the consideration of castles.

The castle of least extent is nothing more than the fortification of a single dwelling; the city is a castle of the greatest extent, a line of defense around a series of houses and public buildings, many of which could defend themselves and were castles.

18. City Castles.

Every city originally had a large castle. Like the Roman castle (castrum) this formed the proper nucleus. This should make the place in a military sense for the defense of the country, before whose gates the peaceful population settled, their dwellings then being surrounded by a fortification, that formed an external line of defense of the city, that must be first taken, before the castle itself could be attacked. Certainly in every city this castle has not been preserved. Nearly everyone that desired to obtain its freedom, must wring it from the master of the castle, and generally enough led the contest therein, so that the city must first destroy the castle of its master before it owed him its freedom, and then could proceed in possession of freedom to build its own castle, i.e., to surround itself by a strong wall.

19. Plans of Cities.

If a castle had fulfilled its purpose, if men no longer needed it, its fate was decided; if not destroyed, it fell into ruin. Differently for the cities; since they did not serve e

...and when their military importance had passed, they
...found no longer had any purpose. A city found itself in con-
...And since few were so thoroughly destroyed,
...then they were planned and built relatively new, then most of-
...even if comprehensive alterations
...the history of their
...development can still be read from the urban plans, and it
...is clearly everywhere the same history:-- first a small settle-
...as attached to a castle and enclosed by a wall; before the
...gates arose suburbs; the city was enlarged, while the enclous-
...and proceeded in its growth until according to the needs
...was this process repeated. Hence also the characteristic in
...the plans of most ancient cities, which always show a level-
...center was dependent on the many accidents of occupation and
...interference the separate circles of ground, but the city
...owners had local needs of communication, that gave it the possi-
...bility of regulating the process, as soon as the undertaken
...order.

Only certain cities are there, that did not pass through a
...this course of development, cities that are arranged around
...a certain perimeter (usually relatively large) and have remain-
...et only extent. The fact, that each of such arrangements must
...be based on a definite plan, combined for such cities a char-
...ter characteristic. But there was a basis of calculation and
...conditioned conditions, since even every need for a city or
...definite size was more accurately determined, than where a

III. MARKET PLACES
20. Marketplaces.

Of the most varied kind of internal arrangements of a city,
...were these, to be considered and called for in the arrangement-
...the first need was a great open space accord-
...pointing to the magnitude of the city, in its middle if possi-
...ble, where the markets were held, and also where at market
...times the people came together to hold a festival or to see
...themselves in free assemblies, they could stay or also discuss
...common and public questions. This place was termed the market-
...place, the "forum" in Hellenic cities, the "forum" because it
...was found in the earliest times. Where the Latin word, a forum

exclusively warlike purposes, they were still further preserved, even when their military importance had passed, and they partly entered into greater prosperity, when their fortifications no longer had any purpose. A city found itself in continual development, and since few were so thoroughly destroyed, that they were planned and built entirely anew, then most older cities as now remaining, even if comprehensive alterations have not occurred in our own time, the history of their development can still be read from the modern plans, and it is nearly everywhere the same history:-- first a small nucleus attached to a castle and enclosed by a wall; before the gates arose suburbs; the city was enlarged, while men enclosed and protected it by another wall; according to the needs was this procedure repeated. Hence also the irregularity in the plans of most ancient cities, since already such a development was dependent on so many accidents of possession and inheritance of the separate parcels of ground, but the city nowhere had legal means of compulsion, that gave it the possibility of regulating the streets, as such can be undertaken today.

Only certain cities are there, that did not pass through this course of development, cities that are arranged within a certain perimeter (mostly relatively late) and have retained this extent. The fact, that each of such arrangements must be based on a definite plan, required for such cities a greater regularity. But there also was a basis of calculated and equilibrated conditions, since even every need for a city of definite size was more accurately determined, than where a city naturally arose and grew.

20. Marketplaces.

Of the most varied kind of internal requirements of a city, were these, to be considered and cared for in the architectural arrangement. The first need was a great open space corresponding to the magnitude of the city, in its middle if possible, where the markets were held, but also where at market times the people came together to hold a festival or to see themselves in free assemblage, they could stay or also discuss common and public questions. This place was termed the marketplace, the "ring" in Slavonic cities, doubtless because it was round in the earliest times. Where men laid it out, a so-

square form as nearly as possible was chosen.

In cities that developed however, such a place no longer sufficed, unless it could be extended; thus several were arranged, so that besides the chief market (also called the "green market") were still found fruit, milk, butter, wine, swine, horse, grain, hay, wood markets, etc., according to which the traffic in certain articles was transferred elsewhere from the chief market. Likewise the designation of "old" and "new" markets is recognized, as a later increase of market places occurred. Men laid great weight on it, as the designation of the market was made according to certain wares, that all dealers had the same articles. The magistrates desired to watch the traffic and the dealers, as well as the quality of the goods. Buyers desired to compare and have a corresponding choice. But the sellers wished to compare the quality of their wares with that of others; but first of all they wished to keep similar prices fixed in common, which were again regulated by the magistrates, in order to protect the inhabitants from extortion.

21. Benches, Cloth halls, etc.

But the same condition also occurred for those goods not sold in the open street, but at least on benches and tables, mostly by native artisans. Then we have the "meat benches" and "bread benches", in many cities being the "shoemakers and other benches". Buildings were partly erected for them, particularly was there also a common "shambles" for the butchers, which we find in all cities. To the most important merchants serving traffic in the developed financial conditions of the middle ages belonged the dealers in money with their exchange bank (bank house, banker) or their table (trapezista). The most extensive transactions were mostly found in the linen and cloth traffic. The cloth halls are in many cities, buildings of very considerable extent and sometimes with great luxury of structural design and equipment. Where this did not attain to a great cloth hall, men had a smaller cloth hall. Also sometimes common buildings were arranged for several kinds of wares. Likewise all such sale places are found in the markets or their vicinity, as far as possible.

22. Weighhouse, Exhibition.

There was also a great public scales, mostly in a separate

building, where under the oversight of the magistrates the goods were weighed, so that every man received his correct weight. There was also found the "exhibition", where all products must be brought, that must be sold only after public testing, where quality was guaranteed by the city, since it formed an essential factor in the general commerce, in the industry and trade of the city, so that it was in the public interest to strictly maintain the good reputation of the products in opposition to underselling traffic, and those carrying on the industries. Spices, especially pepper and saffron, were there tested for their purity, and if found good, were packed and stamped with the city seal. Gold and silver wares were tested for their fineness and stamped. Sword makers and armorers (makers of armor) must allow their wares to be tested for quality, after which they could make their way, likewise furnished with the stamp of the city.

23. City Arcades.

Thus the main traffic was united at the marketplace. There stood the city hall, there dwelt the most prominent and richest citizens; their houses were the most secure in the city and presented arcades in the lower story, that then extended in the adjacent principal streets, within which traffic proceeded in the heat of the sun and the rainy weather, and where in part the benches mentioned found their shelter. They were for European cities what was the bazaar for oriental ones. Thus we find goldsmiths' arcades, cloth arcades, where there is no cloth house, or where it is not sufficient, shoemakers' arcades, etc.

24. Guilds and their Streets.

It was partly based on the traffic conditions mentioned above, partly on the military problem of the guilds, to each one of which was assigned a definite part of the city wall, that the members of a guild dwelt together in the same street. Thus are the smiths', bowyers', cobblers', herdsmen's alleys, or as the appellation appears otherwise, the alleys "under the herdsmen", "under the goldsmiths", etc. arose. Certain of these trades like tanners, dyers and others, were connected with the watercourses, mostly small brooks, that passed through the city; where brooks were lacking, there were canals branching from the main river. Where the trade was not possible

in the city, places outside the city were assigned to such a artisans. But they must all exercise their trades under like conditions. For each member of them was designated the number of his helpers, so that a living was ensured to each, none had to fear the competition of others, but all had the oversight of the entire body of artisans, as well as of the council of the city as to the goodness of the work and the price demanded, so that none could overcharge or deceive his customers. Thereby each street of the city had its individual character in appearance and its separate population, which felt as a unified society, in some sort as a family, and when it was cried out; "the butchers come", "the blacksmiths are coming", men knew when they marched out of the street to the marketplace or to the city gate, that not a single one of them thought or wished differently from all the others. The trade held with the council or was against it. One trade lived with another in friendship or enmity, never the individual.

Substantially strengthened was the corporate spirit by the fact, that the work was done on the street as far as possible. So the external appearance of each street was thereby influenced. In each street was a different kind of work, with its peculiar life, noise and bustle, but in each only the similar appearance of those working, in each all houses originated under the same conditions, therefore in magnitude, internal subdivision and external appearance like each other. In one hung the flag of the dyers on all houses, in another on open galleries were the hides of the leather-workers; there the ropemakers or locksmiths had their workshops open toward the street, again in another the goldsmiths had their shops, in which they placed completed pieces on exhibition. Thus the city presented variety in appearance.

Let us consider certain examples. We have mentioned the city of Carcassone (Lower Languedoc).

25. Examples:-- Carcassone.

Not far from the banks of the Aude (Fig. 1)⁸ rises a hill, on which a castle might properly be built.⁹ On three sides was this adjoined by a little city, wherein it must remain striking, that just the fourth side next the river remained unoccupied at first. Was there some unhealthy swamp land? Were outworks of the city found there; A line of walls was con-

exists today and under line of walls, some parts of which go back into the 12th century, though recently it has been found that the 13th century was erected the outer second wall, in place of which were previously found palisades. Access to the east is was originally situated at the western side, so that the only road to direct connection with it, and in the 13th to 14th century the existing one was constructed. The only road extended by another; particularly were also found in the 13th century between it and the water. They indeed also had their fortifications; yet these were not strong and, and at the site of the city in the year 1240, the bastions soon occupied them to the injury of the bastions. Meanwhile, the ancient Visigothic wall remained the fortification. The importance, that a new external enclosure did not increase the importance of the inner one; with all later extensions, the ancient Visigothic wall remained the fortification. These projects.

... of the ...
... of the ...
... of the ...

As a further example, that exists in more fully, we may also see before our eyes the powerful imperial city of Cologne on the Rhine, whose plan we reproduce in facsimile on the next plate from a copper engraving of the 17th century. (Antiquities from the 17th century).

There are certainly preserved between these fortifications, that were erected in the first half of the 13th century, and it will be easy for the reader to conceive them as removed, so that they may occur from the plan as images of medieval Cologne. Local possession was necessarily to establish the history of the development of the city. As may be observed, Cologne belongs to those cities, in which quite early the castle - we must indeed say the castle - was torn down, so that not only in the plan is any remainder of it.

Note 10. See *Older Thorver and Befestigung*. 1890-1892. *Rhein and Westphalia*. 1898. -- The principal part of the fortifications, under whose name we speak of the book, to the

constructed by the Goths and enclosed this city. There still exists today the inner line of walls, some parts of which go back into that time, though rebuilt in the 12 th century. In the 13 th century was erected the outer second wall, in place of which were previously found palisades. Access to the castle was certainly originally located at the western side, so that the city had no direct connection with it, until in the 12 th or 13 th century the existing one was constructed. The city soon extended by suburbs; particularly were such found in the 13 th century between it and the water. They indeed also had their fortifications; yet these were not strong enough, and at the siege of the city in the year 1240, the besiegers soon occupied them to the injury of the besieged. Meanwhile their fortification again later must also have been of such little importance, that a new external enclosure did not increase the importance of the inner one; with all later extensions, the ancient Visigothic wall rather remained the fortress proper.

Note 8. From Viollet-le-Duc. Vol. 1. p. 353.

Note 9. See Archives de la Commission des Monuments historiques. Vol. 4.

26. Cologne.

As a further example, that busies us more fully, we may place before our readers the powerful imperial city of Cologne on the Rhine, whose plan we reproduce in facsimile on the next Plate from a copper engraving of the 17 th century. (Reduced from the scale of 1 : 12000).

There are certainly represented thereon those fortifications, that were erected in the first half of the 17 th century. But it will be easy for the readers to conceive them as removed, so that they thus obtain from the plan an image of mediæval Cologne. Local research has labored successfully to establish the history of the development of the city.¹⁰ As may be perceived, Cologne belongs to those cities, in which quite early the castle -- we must indeed say the castle -- was torn down, so that not once in the plan is any remainder of it.

Note 10. See Kölner Thorburgen und Befestigungen. 1880-1882. Published by the Architects' and Engineers' Society for Lower Rhine and Westphalia. 1883. -- The principal part had Architect Wiethose, under whose name we shall cite the book, to wh-

which we have to refer repeatedly in our work, without thereby desiring to speak more fully of the other authors.

Men today believe it must be assumed, that the city of the Romans and Franks must have had equal extent, and have represented a line of wall in its ruins, that goes from the approach of the present Rhine bridge by the North side of the cathedral from East to West in a tolerably straight line to Apen street. On our plan this line to the Hoch street is marked by the street passing by S. Lupus (27), which corresponds to the former ditch of this line of wall. The Clara convent (22) designates the corner at which the round tower still remains, that we must designate as Frankish. From thence the course of the wall and ditch goes in a slight curve to the brook, that is visible in our plan, that comes from the West and enters the city at H, divides in two branches near 18, which discharge into the Rhine North and South of S. Maria Lys church. On our plan is still indicated the gateway, which there led into the old city, where the brook divided. Parallel to this brook now ran on the South side of the old city to the Capitol. Yet the original form of the city next the Rhine must not be decided from our plan. It is fixed, that two arms of the Rhine had cut out two great islands, on which churches S. Maria Lys and Great S. Martin stood. The main arm extended along the points of our plan on which are placed the letters C and E, from which the curved course of the streets extended southeast to the Rhine and indicates the course, that the separating arm took, in order to flow behind the island of Wörthchen visible on the plan, and into the still existing arm of the Rhine.

Therefore the old city on the East must have only extended to the line leading behind S. Maria in Capitol, Little S. Martin, the City Hall and S. Maria ad gradus at the East side of the Cathedral to the point 27 on our plan. This line, as here represented, is likewise the enclosing line of the Frankish city.¹¹ Therefore it is unimportant for the investigation, and it may only be noted, that we hold and are convinced, that the enclosure is not that for the Roman but the Frankish city, and that the Roman city was substantially smaller, so far as it was fortified.

Note 11. Whether depends here on an investigation of the

proposed Michael Katz, that was published in the programme of the Obersteichschule of Cologne in 1882-1883, to which we also refer. It lies outside our problem to prove here, will we hold this course of wall and ditch to be not Roman but Frankish. The Roman castle (castrum) uncovered in Dautz shows, as it does also other, entirely different masonry, and since both castles of Cologne and of Dautz supplemented each other, their authenticity is not to be doubted, and thus similar masonry is to be expected. If we must express an opinion, we assume that the Roman city was originally limited at the South by the line of our plan, that passes beyond S. Maria im Capitol, West of the castle (castrum) may have been seen behind the City H. the castle (castrum) seems questionable to us.

On the Capitol, where Biscardi, the house of Basil of Herta, that founded the Maria convent. The bishop's or emperor's chapel, which dominated the city, was then patroned by the emperor, and the castle will be mentioned later.

Before this city, that passed and narrow streets inside, a wall was not to be found originally irregular, in which two straight streets intersect each other, there were four squares, of which the western S. Apostles included all to which the figure 20 stands on our plan, as far as the continuation of the West-East street, passing beyond the Clara convent. Another square was found on the North side, enclosed by the curve passing through the points marked 29, that extends to S. Gerhart (29) and enclosed the Ursula convent. (31). 12 Another square adjoined on the South, extending to the broken line as far as the island Wittenberg. The importance of all these squares is based here as everywhere first on the fact, that the city gates were closed early in the evening, and a strict control at the gates for poor persons and goods, that entered the city. For there then existed places on which depended those not admitted, emigrants and other artisans, also primarily workers, poor men, and countless lay down in the streets,

architect Michael Motz, that was published in the Programme of the Oberrealschule at Cologne in 1882-1883, to which we also refer. It lies outside our problem to prove here, why we hold this course of wall and ditch to be not Roman but Frankish, that was followed and firmly established by Motz. The Roman castle (castrum) uncovered in Deutz shows, as Kiethose also states, entirely different masonry, and since both castles at Cologne and at Deutz supplemented each other, their similarity is not to be doubted, and thus similar masonry is to be expected. If we must express an opinion, we assume that the Roman city was originally limited at the South by the line of our plan, that passes beyond S. Maria im Capitol, West through the High street, North by the street between the Cathedral and S. Lupus. Originally perhaps the Northern limit of the castle (castrum) may have even been behind the City Hall. Whether even in Roman times occurred an extension of the castle (castrum) seems questionable to us.

Where stood the royal castle of the Frankish city? Indeed on the Capitol, where Plectradis, the spouse of Pepin of Herstal, that founded the Maria convent. The bishop's or archbishop's castle, which dominated the city, when this belonged to the archbishops, likewise lay near the cathedral. Other castles will be mentioned later.

Before this city, that indeed had narrow streets inside, but still was not to be termed particularly irregular, in which two straight streets intersect each other, there were found suburbs, of which the western S. Apostles included all to where the figure 20 stands on our plan, as far as the continuation of the West-East street, passing beyond the Glara convent. Another suburb was found on the North side, enclosed by the curve passing through the points marked 23, that extends to S. Cunibert (33) and enclosed the Ursula convent. (31).¹² Another suburb adjoined on the South, extending to the broken line as far as the island Wörlchen. The importance of all these suburbs is based here as everywhere first on the fact, that the city gates were closed early in the evening, and a strict control at the gates for both persons and goods, that entered the city. For there then existed places on which gathered those not admitted, smiths and other artisans, also primarily bakers, bath men, and peddlers lay down in the streets,

that here were far wider than in the interior of the city, to afford space for the wagons remaining here for the night. Wealthy citizens possessed gardens there; gardeners cultivated those of the finer vegetables necessary for the city. There arose the great monasteries, that found no room in the interior of the city, and even were surrounded by walls forming separate fortresses before the city, before whose gates artisans likewise settled. These fortresses could even be utilized against the city under some circumstances, and at most cities in this was the chief motive to include the suburbs and these fortresses within the circle of the city. In Cologne this occurred after the middle of the 10 th century. After 1021 the inclusion terminated. By the annexation of each such suburb the irregularity of the city plan was increased. In any case the eastern part with S. Martin monastery was first included, the other suburbs mentioned, at the close of the 10 th and the beginning of the 11 th century. In the course of the 11 th the great monasteries were particularly extended by new adjacent structures, and in the course of the 12 th must also have been annexed S. Gereon, S. Mauritius, S. Pantaleon and S. Severin, so that the walling of the city was arranged, as we see on our plan, and which was first removed after for a few years it had formed a part of the modern citadel. The time of 1180 to 1200 is given as that of the erection of the new enclosure; yet this first refers only to the wall and ditch by which the city was surrounded, while the next centuries were engaged in erecting and completing walls, towers, gateway castles. The enclosure, as it was retained by the city at the close of the 12 th century, was partly executed in independence of the archbishop. As in the old enclosure he indeed held the strongest points, the gates, he may also in the new have retained strong points, castles by whose possession he had the city in his power. At least at the Boyen gate was found one such, that in the 13 th century was taken and torn down by the citizens. The archbishop's castle near the cathedral may then have been unimportant, but in the 13 th century was it similarly torn down, when the grand rebuilding of the existing cathedral was planned, and just its removal may have afforded indeed so much free space, as our plan shows in the vicinity of the cathedral. Also the citizens of Cologne

would naturally have been a good deal more
of the time.

Note 12. It is only on one point, that of the
the French cannot be named, but the important chapel of St.
French.

The position of the city is very important. It therefore
inclination of the suburbs, as we see it today. It therefore
needs not the same position, that particular character of the
the suburbs in the domain of strategy, whether as a certain
writers assert, the plans of such derived fortifications afford
such advantages, that they are not regarded as accidental, but
not as well considered. We believe, that where a city had a
nations, its gates designated the definite direction of the
line of the city, and the line of the city, and the line of the city,
line of the city at last became.

Let us glance a moment more into the interior of the city.
The walls of the city were not built on a high hill, but on a plain,
and in the interior already away as far as the city, and
the length of walls must be brought into accord with the
of the city, and in the interior, there was no necessity
to them as unnecessary lines by including great unutilized
space, and not in the city. There already was space enough
by the great French fortifications, by the suburbs, by the
public buildings for administration and commercial purposes,
on which the defenders could dwell. Thus men would not have
the city, and the city, and the city, and the city, and the city,
where was not by the resident citizens, fellows of all sorts
as could gather behind high garden walls, in order to make a
surprise attack on the city wall from the rear. Men were requir-
ed to make the streets very narrow so as to bring the most
defenders possible on a small area. As in every city, we see
in the city also with streets only where there formerly been
to the suburbs and lay outside the other fortifications,
but not to other inner gates, and about where an old city di-
vision, and the city, and the city, and the city, and the city,
use, settling the old course of the walls with space not uni-

would scarcely have patiently endured such a castle so near their city hall, strongly fortified according to the custom of the time.

Note 12. It is only an error in our plan, that by 31 not the Ursula convent is named, but the unimportant chapel of S. Renchen.

The enclosure of the city likewise became so served by the inclusion of the suburbs, as we see it today. It therefore needs not the assumption, that particular principles of military architecture gave occasion for this. We must leave it to the authorities in the domain of strategy, whether as certain writers assert, the plans of such curved fortifications afford such advantages, that they are not regarded as accidental, but as well considered. We believe, that where a city had a nucleus, its gates designated the definite direction of the suburbs, whose growth alone determined what its external enclosing line at last became.

Let us glance a moment more into the interior of the city. We shall certainly not have to assume now, that all those areas in the interior already given as gardens on our plan, were already in the 12 century areas free from houses. Since the length of walls must be brought into accord with the number of defenders, thus of inhabitants, there was nowhere given to them an unnecessary length by inclosing great unguilt areas, and thus not in Cologne. There already was space enough by the great Church foundations, by the churches, by the public buildings for administration and commercial purposes, on which the defenders could dwell. Thus men would not have enclosed unoccupied areas, unless at least their immediate settlement was in view; places were hardly created purposely, where unnoticed by the resident citizens, fellows of all sorts could gather behind high garden walls, in order to make a surprise attack on the city wall from thence. Men were required to make the streets very narrow so as to bring the most defenders possible on a small area. As in every city, we see in Cologne also wider streets only where these formerly belonged to the suburbs and lay outside the older fortifications, but led to older inner gates, and about where an old city ditch remained a longer time, and by ceasing the internal defence, settling the old course of the walls with space not suf-

...for two streets. From each side of the city a ...
...from North to South (from St. ... was the chief artery of
...to the ... by the ...
...from all the ... which extended outside the
...as ... it is even everywhere connected by
...with the bank of the ... But in the streets
...then the life in ...
...in the ...
...then also find such ... in old ...
...in many other ...
...largely provided. The ... of the ...
...in which men were ... in 1840, and ...
...1800, since in 1874 ... with the ...
...on the ... under a fixed ... for each build-
...the site was ... to lay out two ...
...places, the old market ... and the ...
...ker B. ... in any case. ... from the ...
...the ... of the ... of the ...
...The ... at the ... of ... (24), ...
...of the ... 1800, and then ... the ...
...Bismark ... now is, a place ... of ...
...did not ... when our ... was ... but does ...
...to the ...

The walls, gates and towers will be mentioned later.

...the ... of ... we place the ... of
...a little city, ... in ...
...at about the same time as ...
...and ... and therefore ...
...could ... the importance, such as ...

... 1847.

sufficient for two streets. From each gate of the city a connecting street goes toward the centre. The long straight street from North to South (Hoch St.) was the chief artery of traffic; therefore to it led by the shortest possible ways the streets from all the gates, which extended outside the gates as country roads, it is even everywhere connected by cross streets with the bank of the Rhine. But if the streets were narrow, then the life in Cologne required the largest possible free spaces in the midst of the narrow streets. We then also find such abundantly provided in old Cologne, as in many other cities. First these free places also served a around the churches as cemeteries; but also marketplaces were largely provided. The filling up of the old arm of the Rhine, in which men were engaged in 1140, and that may have been completed about 1200, since in 1174 a contract with the archbishop on the occupying under a fixed ground rent for each building site was agreed on, gave opportunity to lay out two great regular places, the old market C of our plan and the hay market B. Later than this in any case, judging from the name, is the plan of the new market at the East of the Church S. Apostles. The free space at the East of Church S. Gereon (24), that West of the Church S. Apostles, where is no. 21, then at 20, and then where today the Moltke monument stands, North of Little S. Martin, a place West of Little S. Martin, where the Bismark monument now is, a place North of S. Severin indeed did not originate when our plan was engraved, but goes back to the middle ages.

The walls, gates and towers will be mentioned later.

27. Friesach.

Beside the mighty city of Cologne we place the example of a little city, Friesach in Carinthia,¹² that received its walls at about the same time as Cologne, acquired its present plan in southeast Germany, but under entirely different conditions and requirements, and therefore neither then nor later could obtain the importance, such as Cologne had.

Note 12. Hohenauer, F. L. Die Stadt Friesach. A contribution to the secular and ecclesiastical history of Carinthia. K. Klagenfurt. 1847.

Oesterreichs kirchliche Kunstdenkmal der Vorzeit. Lief. 5, 6. Friesach in Carinthia. By H. Hermann. Vienna. 1858.

Essenwein, A. Die mittelalterlichen Kunstdenkmale der Stadt Friesach in Kärnten. Mitt. der K. K. Gen. Comm. for examining and preserving architectural monuments. 1863.

Friesach was well located on an important traffic route; but it only served as a military station to control this road. Neighboring cities had trade privileges lacking to it, and thus it remained restricted to the magnitude it originally had, and that were firmly retained, however frequently it was rebuilt in consequence of destruction. We give in Fig. 2¹⁴ the plan of the city at the same scale as that of Cologne (1 : 12000). At the close of the 9 th century was the place first mentioned, being designated as a village in 928; in the year 1015 it was raised to a market with a custom house, and in the second half of the 11 th century it found itself in the possession of the archbishop of Salzburg, who elevated it to a city in 1072. It was the fortress of Petersberg, at the foot of which settlers had gathered, which then received city rights. Besieged in the year 1090, the city was taken without the fall of the fortress; it was even in 1131, when archbishop Conrad I began in 1124 to fortify the city anew. This fortification has remained in its essential parts until today; at least the city ditch, which is fed by springs and extends from the Petersberg to the Vigilienberg, belongs to that time. In the battle of Rudolf of Hapsburg, at whose side stood the archbishop of Salzburg, with the Bohemians, the latter conquered the city, that 20 years later was again taken by archbishop Albert of Austria and destroyed. Thus the details of fortifications, of battlements of the walls, the gates, etc., may belong to the close of the 13 th century and to the 14 th century. Archduke Rudolf conquered the city in 1395 after a brief resistance. As a military station the city was the seat of many nobles. At castle Petersberg the Salzburg archbishop resided only exceptionally; but his suffragan and vicegerent, the bishop of Lavant had his residence there, and history speaks of festivals and visits of the emperor in the 12 th and 13 th centuries. Particularly the tourney held in 1217 has become famous by Ulrich von Lichtenstein's description, that Leopold the Glorious of Austria held, and at which 10 ecclesiastical princes and 600 knights were present. However important accordingly the splendor of the city must have been sometimes, yet the greater wealth is not mentioned, that the ext-

extended traffic of carriages and horses was
entirely middle aged and even later, and during the
position by water, a series of considerations
and associated the development of the city.

Note 11. From a drawing by the author.
Note 12. Such that held in other the entire city, or of
out more or less former parts thereof, occurred in 1800, 1800,
and 1810.

Let us now take the plan of the city in 1810. In the
masses of rock in the plain of the Meuse valley, wide here,
through ran one of the roads connecting Germany with Italy,
that first led from Antwerp, through the Meuse valley
to the Rhine, and thence to the Rhine, the Rhine of
these rocks is the fortress, with a long and narrow road
used to pass a considerable castle, and which was also
first fortified. For some time it served a road extending to
it on the left, North and West sides, and again on the South
side almost over the beginning leads into the interior. Behind
the this terminus of the road and runs below the South
leads to the Meuse in a straight line from the way of
and from West to East. On it was founded the marketplace.
to the Rhine (4), approximately parallel to several
churches. Behind the marketplace and at the foot of the rock,
the city cannot with the masses of rock and cannot form
the city. The southern end of the city was characterized by
the rock, the Viridifera, that in some places, that
the occasion for the rebuilding of the city fortifica-
tion, the fortified by the enemy with a castle, and therefore
must be included within the fortifications. Likewise not been
sufficiently utilized a mountain and according to the city
from the mountain range almost parallel to the Rhine.
and was therefore taken into the city (see lower). The
all of rock, the fortress, was too far from the

extended traffic of citizens might bring. The architectural style of the houses was certainly very primitive during the entire middle ages and even later, and aside from the destruction by wars, a series of conflagrations ¹⁵ was increased by the defective mode of construction and faulty precautions, and restricted the development of the city.

Note 14. From a drawing by the author.

Note 15. Such that laid in ashes the entire city, or at least more or less larger parts thereof, occurred in 1309, 1340, 1384, 1455, 1461, 1493, 1557, 1582, 1652, 1673, 1752, 1804 and 1816.

Let us consider the plan of the city in Fig. 62. In the West rises a mighty mountain range, at the foot of which rise three masses of rock in the plain of the Metnitz valley, wide here, through ran one of the roads connecting Germany with Italy, that first led from Knittelfeld, Judenburg, Neumarkt past Friesach to S. Veit, Klagenfurt and Villach. The mightiest of these rocks is the Petersberg, with a long and narrow top adapted to bear a considerable castle, and which was also then first fortified. For ascent to it served a road extending from the South point at the foot of the rock, extending around it on the West, North and East sides, and again on the South side almost over the beginning leads into the interior. Before this beginning of the road and thus below the South point settled the people, whose central point was the street that leads to the Metnitz in a straight line from the way of ascent and from West to East. On it was formed the marketplace. From thence a street ran to the foot of the Petersberg along to the Neumarkt gate (4), apparently parallel to several others. Behind the marketplace and at the foot of the rock, the monastery church with the houses of prior and canons found place. The southern end of the city was characterized by the second rock, the Virgilienberg, that in both sieges, that had given occasion for the rebuilding of the city fortifications, was fortified by the enemy with a castle, and therefore must be included within the fortifications. Likewise had been substantially utilized a mountain spur approaching the city from the mountain range almost parallel to the Petersberg. Its end was therefore taken into the city (red tower). The third hill of rock, the Geyersberg, was too far from the cen-

centre of the city for this to be extended at once to it. Therefore it received a separate castle; with the extension of the city it was then likewise included within it. Doubtless there were also found here early settlements of citizens, as in other cities, that formed suburbs outside the city in the Metnitz valley. The Dominican monastery founded in 1217 was located before the city in 1251; already in 1230 the Teutonic order of knights existed in Friesach, and had its house of the order southeast of the Virgilienberg. Thus are found everywhere ruins of walls and towers, that these suburbs formerly comprised. We have outlined them in dotted lines, and have marked their towers by numbers 17 to 22. The importance of these suburbs was however little enough, since the line of the external walls was not maintained. The popular tradition is that these remains of walls are not later, but belong to an earlier period than the main walls, that the old city of Friesach was far larger, and only in the 12 th century was reduced to the present circuit. From what they actually date is hard to say on account of the formlessness of the existing ruins, and it can only be conjectured, that it was about the 14 th century in which these later omitted fortifications of the suburbs were executed.

26. Saona.

The great difference between the plans of different cities is essentially based on the fact, that for each city the conditions of the locality and historical traditions were different, and therefore different results occurred everywhere. But the procedure was still the same. Nowhere prevailed chance and caprice; there was always a series of primitive factors, that had a determining effect and from which the result proceeded, as just shown to us. Therefore entirely different, than if on a river and in a plain, must a city be formed in the mountains.

A number of cities were built by Europeans in Syria ¹⁶ in the 12 th and 13 th centuries; even there no principles prevailed, other than those in their native land; likewise there were castles, built where need required, on the apex of the hill or on the seashore, as extensive as space allowed and as circumstances required. Also there everything was utilized, that nature offered, and all was supplied that she refused.

has been investigated of the numerous kindred on the principal
of the various important lines. The conditions of the various
and subjects have also been investigated, and likewise also
therefore the relations of city and castle. We then select an
example of a medieval city center. In this, I give (also)
of the plan of the city (now San Juan). 12

Note 16. See Reg. E. G. 2121 sur les monuments de l'histoire
culturelle des choses en France et dans l'île de Guinée.
Paris. 1911.

Note 17. See the same. p. 107.

Note 18. See the same. p. 108 et seq., and Plate 12.

located on a volcanic ridge between the town and the
rocky slopes, the city consists of three parts, whose middle
portion is separated from the western and eastern parts by
water cut in the rock, and bears a vast castle A, to which we
shall return later (in the description of castle B). On
the western part B the greater portion of the enclosure walls
may be traced. From the tower, to a lesser height, the road
of the castle toward the city, where the two valleys meet,
it appears as a sort of a. We are not instructed as to the
former course of the road. The fact that the entrance from B
lay close to the northeast angle most indicated that the road
on the western side, beginning at the point of the projection
of the hill, led easterly over the entire plain, and that not
far from the corner of B a short section passed across the
road to the gate, so that visitors could go to the
city from the gate along the walls of the little city B. A
case the entire forces of the city were stationed on
the wall facing right side, unprotected by the castle. If the
city had been around the corner to the left way over the
road to the gate of B, they had before them the defense of
B, behind which those stationed on the walls of the castle A.
The area of the little city B is very small, and the town to-
it was exposed to the first attack, it must have been oc-
cupied by the best part of the defensive troops. Little no-
te can be said of the internal arrangement of the small city.
A canyon lay in the vicinity of the entrance. Doubtless there
existed a connection of B with the castle A across the road
and in the rock, which is no longer to be recognized. The road

Men had governments of the European kind based on the principles of feudalism introduced there. The conditions of monarch and subjects were also similarly arranged, and likewise also therefore the relations of city and castle. We then select an example of a mountain city there. In Fig. 3¹⁷ we give (also at a scale of 1 : 12000, like the other city plans), a sketch of the plan of Saona (now Sahioun).¹⁸

Note 16. De Rey, E. G. *Etude sur les monuments de l'architecture militaire des croises en Syrie et dans l'ile de Chypre*. Paris. 1811.

Note 17. From the same. p. 107.

Note 18. See the same. p. 105 et seq., and Plate 12.

Located on a mountain ridge between two narrow and steep rock canons, the city consists of three parts, whose middle portion is separated from the western and eastern parts by moats cut in the rock, and bears a vast castle A, to which we shall return later (in the description of castle plans). Of the western part B the greater portion of the enclosing walls may be recognized. Placed lower, in a manner securing the foot of the castle toward the place, where the two valleys unite, it appears as a part of it. We are not instructed as to the former course of the road. The fact that the entrance from B lay close to the northeast angle must indicate that the road on the western side, beginning at the point of the projection of the hill, led northerly over the entire plan, and that not far from the corner of B a short branch passage across the moat ended at the gate, so that besiegers daring to use this road must first pass along the walls of the little city B, thus its entire forces offered to the defenders standing on the wall their right sides, unprotected by the shield. If they then turned around the corner to win their way over the moat to the gate of B, they had before them the defenders of B, behind them those standing on the walls of the castle A. The area of the little city B is very small, and the fact that it was exposed to the first attack, it must then have been occupied by the best part of the defensive troops. Little more can be said of the internal arrangement of the small city. A church lay in the vicinity of the entrance. Doubtless there existed a connection of B with the castle A across the moat cut in the rock, which is no longer to be recognized. The road

to the Eastern part now led farther along the North wall of A, well below the wide moat, and also along the North wall of C; rising there, it may have led to the northeast corner in the little city C. Walls and buildings there are only a jumbled heap of ruins, allowing details to be recognized no longer, so that in Fig. 3 only by a dotted line can be approximate perimeter of the little city be indicated. Through this and near the North side led the main road to the castle A. The moats, cut in the rock and separating A and C, arouse the astonishment of travelers; a massive stone obelisk left standing in the middle formed the support for a bridge, and it especially surprises travelers. The chief interest of the plan, aside from the great ratio of the castle to the city, is the fact that the city is entirely separated into two parts, in order to ensure to the castle the most favorable position in the middle.

Naturally nothing is to be said of the history of the development of this city. There already lacks space for it, the decline of the Christian states brought a sudden end to the cities and castles of Christian Syria. The plan dates from the 12th century. Already in 1187 Saladin conquered the city and castle; it later became the chief place of a petty Arab principality; but because unimportant, the means of defense fell into ruin, such as the strong buildings, and the little city gradually sank to a village. We have a very instructive Arab report of the conquest, from which the weakness of the fortifications of the city is apparent, as well as the care with which the Mohammedans utilized them. We shall also return to this later.

29. Giblet.

Also for another case of a city plan we select an example from Syria. A city serving to defend a safe landing place on the seashore is Giblet (Dbeail),¹⁹ whose ground plan we reproduce in Fig. 4.²⁰

Note 19. See Rey, p. 115 et seq.; 217 et seq., as well as P. Plote 21.

Note 20. The same. Plote 21.

On the rocky coast is a place slightly recurved, that extends in a sandy shore. A long reef of rock rises from the sea and runs a short distance before it. In Fig. 4 this rocky reef

is designated by B, while A denotes the harbor, separated from the sea by some embankments and found behind them. A hill G gave room for a castle, before which and gradually rising from the sea extended the little city, enclosed by the wall in straight lines B C D E F, which is strengthened by a series of towers, two of which dominate the entrance to the harbor, that could be closed by a chain between them. A series of harbor cities must maintain open connection with the West, and one of the principal places for this was Giblest. The harbor cities also generally remained longest in Christian possession. In the year 1109 a Genoese fleet had taken the place, that was especially suited for a landing place. It appears to have been fortified soon afterwards. Meanwhile, however strongly fortified it was, yet Hugo III, lord of Giblest and captured in the battle of Hattin, must relinquish it to Saladin as a condition of his freedom, who destroyed a part of the fortifications. Only in 1197 the city again passed into the possession of the master bearing its name, until in 1266 it was forever lost to Christian rule. The population of the city today consists in part of Catholics, to whom was also left the old Gothic Church of S. John. While the castle passes for a work of the 12th century, the walls of the city in their lower parts are regarded as one of the 13th century. Yet only for a small height do they even belong to the middle ages, but in their upper parts are a work of the Turkish government.

The internal plan of the city, of which only the higher eastern portion has regular streets like a city, presents no further interest. Besides access from the sea, the city had at the north side a gate G, later walled up. Did this extend back into the middle ages? Doubtless on the north or east side under the walls of the castle a second and no longer existing gate led into the interior of the city.

The rectilinear plans of the castle and of the city wall of Giblest inform us, that in the middle ages when appropriate, men employed straight lines and right angles just as gladly as in later times. Other plans of the crusaders in the Orient also show this to us (for example, Caesarea).²¹ Certainly we also have to regard the interior of the city as arranged regularly and with straight lines, like the course of the walls.

Note 21. See Rev. Plate 22.

30. East European and French Cities.

Besides the ideal phenomenon presented to us by the crusades, that is shown to us by a multitude of inspired, pious and brave men, who left homes and families to devote their powers to the honor of God in dangers of all kinds in foreign lands, there present also a very material side. If then a great number of crusaders would find rule and possessions or at least livelihood suitable to their rank, that in the form they desired was furnished them by the conditions of their homes. In other words, Europe had superfluous powers, that it expended in colonizing countries, which in antiquity were seats of a high civilization, but under the rule of Islam had fallen into ruin. As gradually this diversion of superfluous power found obstructions in its way, men found that Europe itself offered land enough suitable for colonization, where particularly the activity of the citizens could still find a place, at which they would be welcome. Hungary and Poland, also the lands lying farther east, so far as they adhered to the western Church, needed the cities for manual activities, as well as to present safe places for trade and traffic. Then we see a great series of cities founded in the east of Europe, that particularly attracted German citizens, and while producing rich gains for them, were brought by them to greater civilization. All these cities, so far as they were located in the plain, exhibit a regularity of plan surprising to all, who have seen no other mediaeval cities than those originating gradually, which were mostly obstructed in development by peculiarities of the ground, receiving that irregular appearance in the interior and on the exterior, that seems so romantic to us, but which is only the result of compulsion of circumstances, that men bore only because they must.

But also in the midst of the countries, where was most highly developed the civilization of the middle ages, there was still room for new cities, and we see an entire series of them arise in southern France, entirely regular in their interiors and exteriors, arranged with straight lines and right angles, where the least departure from regularity of plan is to be referred to definite external requirements.

31. Examples. Aigues Mortes.

We give in Fig. 5 (at the scale of 1:12000) the plan of

also a little beyond city, across the river, that originally lay on the opposite side of the river from the town of the river, but whose name was filled with water by the river- side of the sea, yet for which the name was preserved still. It is a stone location in the plain.

21. Gerson.

It is preserved to us by the chief part of the old royal capital of Gerson, where indeed this regular plan only forms a part of the general plan extending in free development. The

of Gerson.

Note 28. See Kesselwein, A. Die mittelalterlichen Kunstdenkmäler

The beginning of the city is also to be seen here in the old wall, that rises on the east of the church and bears the royal castle with the cathedral. The situation was favorable for traffic; a road led north from Hungary, and another from Germany crossed it here; from very ancient times there- fore, a permanent settlement was found here. That found here it in the ruins of the Romanesque at the close of the 10th century, from whom historians of Gerson took it in the year 900.

Again when Duke Meinwold died in 1057, the Poles turned the Christian priests and again introduced pagan worship, the Romanesque conquered Gerson, that rose again toward the close of the 11th century, after it was taken and destroyed by the Hungarians. Injured by a conflagration in 1187, the city was destroyed in 1241 by the Mongols. In the year 1241, the king of Bohemia V by the destruction of Gerson founded a new city of Gerson with a bishopric of Western Pomerania. The Mongol hordes repeatedly invaded Poland and found Gerson, that only in 1287 could resist them during the 13th century. In the year 1300, the city was again destroyed by the Poles, but the seat of the castle and was found as it developed before this access.

Of its oldest form and extent little is known; it appears to have had a tolerable enclosure; for at least the foundations of churches are seen, like S. Elizabeth in the north and S. St.

such a little French city, Aigues Mortes, ²² south of Nîmes, that originally lay on the seashore not far from the mouth of the Rhone, but whose harbor was filled with sand by the recession of the sea, yet for which the marshy surroundings still affords a strong location in the plain.

Note 22. From *Annales archéologiques*. Vol. XI.

32. Cracow.

An example of such a regular plan of a German city in Poland is presented to us by the chief part of the old royal capital of Cracow, ²³ where indeed this regular plan only forms a portion of the general plan extending in free development. Fig. 6 gives (at the same scale as of the other city plans) that of Cracow.

Note 23. See Essenwein, A. *Die mittelalterlichen Kunstdenkmale der Stadt Krakau*. Leipzig. 1866.

The beginning of the city is also to be sought here in the hill Wawel, that rises on the bank of the Weichsel and bears the royal castle with the cathedral. The situation was favorable for traffic; a road led north from Hungary, and another from Germany crossed it here; from very ancient times therefore, a permanent settlement was found here, that found itself in the hands of the Bohemians at the close of the 10th century, from whom Boleslaus of Gnesen took it in the year 999. Again when duke Mieczylaus died in 1035, the Poles murdered the Christian priests and again introduced pagan worship, the Bohemians conquered Cracow, that rose again toward the close of the 11th century, after it was taken and destroyed by the Hungarians. Injured by a conflagration in 1125, the city was devastated in 1241 by the great campaign of the Mongols, whereupon duke Boleslaus V by the introduction of German inhabitants founded a new city of Cracow with adoption of Magdeburg rights. The Mongol hordes repeatedly invaded Poland and injured Cracow, that only in 1287 could resist them behind its fortifications. On the plan and the extent of the city it is to be stated, that the ascent to the castle hill was found at the northeast corner, and that as everywhere so here, the city developed before this access.

Of its oldest form and extent little is known; it appears to have had a tolerable enclosure; for at least the founding of churches far apart, like S. Florian in the north and S. St-

Stanislaus in the south, is referred to the early time. The mode of construction in wood indeed brought with it, that conflagrations and war could very considerably injure the city. But also we do not have to regard in any wise the entire city as a unified group.²⁴ There might stand here and there certain groups of blockhouses surrounded by wall and ditch, which is indeed confirmed, since the separate parts of the city already early bore special names. The church buildings were surrounded by monasteries, and partly fortified as independent architectural groups, lay at considerable distances from the other groups of buildings. Before the gate of each, as everywhere, may have been a small settlement. When now the city must be founded anew about the middle of the 13th century after the Mongol invasion, only the ecclesiastical probably were so fixed, that the new plan must take them in consideration. For this new plan the most suitable area was found on the northern plain, where a number of streets crossing at right angles could be arranged with a great open space, the "ring" in the midst. The direction of these doubtless resulted from the fact, that the connection with the monastery of S. Florian on one side gave a definite line for a main street line, on the other side the already existing church S. Maria indicated a terminal point of this street. Thus resulted the direction of the ring; from this followed the arrangement, and doubtless the first fortifications were arranged around the city as a regular rectangle. The Franciscan monastery, which lay directly outside the rectangle, may have been included as a right-angled triangle adjoining the rectangle, so that the gate stood near S. Peter. A connection from the ring outward must have been created according to the other parts lying outside this fortification. A street corresponding to the diagonal from the little church S. Adalbert outward afforded this connection, and could be extended direct to S. Leonhardt on the Weichsel. What sort of fortifications could resist the Mongols in 1287 we do not know. But it should not be a false assumption, if we assume that these only consisted of a wall and ditch; for already in 1298 duke Wenzel enclosed the city by strong walls and at the same time fortified the castle, which in 1265 Boleslaus is expressly stated to have rebuilt in wood on the Wawel. Certainly in one year was not

completed the building of a stone walled enclosure, like that of Cracow, and the date of 1298 indeed denotes the beginning of a slowly completed transformation, that was executed in the course of the 14th century, but first completed in the 15th and perhaps in the 16th century. Aside from the fact, that such an extensive construction required time and means, that were not to be provided in one year, it was not possible to remove at once the entire fortifications of the city and to begin anew, since the city must not be defenseless for a moment, because otherwise everyone would have made use of this defenselessness, who desired to get the city into his power. Rather must this have proceeded gradually and slowly; never must a greater piece be open, than under all circumstances could be defended against an enemy.

It must be regarded as a rule, that where it was necessary to first build the new wall before or behind the old one, according to the conditions of the adjacent civic or ecclesiastical establishments making this possible and necessary, it must stand complete, before even a small extent of breach in the wall could be made. Walls and towers could seldom be erected at the same time; generally the walls must stand first; only then were the towers added. Only when the main walls could safely be defended, at their base instead of the palisades that must form the enclosure till then, might be erected the front or outer wall, the moat be excavated and gradually widened. In every case must one proceed here according to the momentary and local conditions inside and outside the city, always at right and left seeking the junction of the new and old. Thus it is nowhere surprising, if irregularities in the course of the walls resulted from this procedure; we find in many cities quite striking junctions of a part of the course of the wall ²⁵ to the other parts or at gates and towers.

25. In reference to the walls of Cologne, whose walls call attention to several such cases.

Therefore we must not be astonished, that in Cracow the beautiful square, according to which the wall was doubtless laid out, that surrounded the city in the 13th century, was no longer retained in the enclosing wall of the 14th and 15th centuries.

As also stated above, in case the city in the earlier time

was entirely separated from the castle and stopped near the Franciscan church, and the space between the castle and city was occupied by swamps and was uninhabitable, yet since S. Andreas as well as S. Martin and S. Egydius go back to the early time, then under all circumstances the connecting street, on which about 1400 church S. Maria Magdalene was founded, and on which also Ss. Peter and Paul stood in the 15 th century, must have existed already in the earlier time. It is therefore next to assume, that also in the 14 th and 15 th centuries in addition to the line of walls about the new plan of the 13 th century, the part of the city lying between it and the castle was walled; on the east side as it still stood at the beginning of this century, on the west side as we have indicated by a dotted line. A rebuilding of the bishop's palace required the city wall to be broken through at this place in the 17 th century, evidence that already then, this no longer had the proper importance as a fortress.

This walled city also had its open suburbs, that however in the middle ages were no longer enclosed by a common wall. On the other hand on the island in the Weichsel in the south was built the city of Gasimir, which received from king Casimir the Great in 1335 city rights, and doubtless also then its fortifications. Although the city of Gasimir was not much inferior in size to the sister city of Gracow, the fortifications had still no particular importance. Nevertheless the course of the wall exhibits something instructive. On the Weichsel it followed quite accurately the curvatures of the river; since just on the inside of the curves sand was usually deposited on the bank, so may the case have been here also, that previously the shore of the river actually washed the base of the wall, as represented in the Schedel Chronicle.²⁶ It is to be recognized on the west side, how the wall was built against the rock, where adjoining S. Stanislaus church on Skalka.²⁷ How greatly men considered the conditions of the ground particularly occurs on the east side, where the wall is sharply incurved, since a gap was in the way, that was an obstruction in the interior, but externally served as a further protection, just as a similar one also appeared farther north, and determined the northeast angle of the city wall. Otherwise the wall shows how such a plan was created before it was str-

represented by water; the although the view of the scheduled
interior shows us a rich series of towers, such as the city
situated to assure this arrangement of the city walls.

Note 27. "Skolka in German = rock."

28. Natchez.

the city of Natchez, essentially closed with the 12 to 13
to, even if the details of the city fortifications are
long to a far later time. If then Natchez affords an example
in which the center of activity of the city lies in the 13 to
century, and the fortifications are essentially to be dated
and as a work of the 14th century, we now still have to give
as an interesting example a city, whose development in area
continued to the close of the 18th century. Given an example is
described to us by Natchez, whose plan (at the close of 18
1800) is given on the adjacent page.

Note 28. From that published by the Society for the History
of the City of Natchez, the plan compiled by M. Bopp.

From the great valley of the Natchez river a mile or more
whose western portion runs easterly, while the eastern portion

the city Natchez (see also the plan of the city of Natchez)

with its lower top, this may be taken as one of those points
which water carries material above, that presented a certain

entirely abandoned area, and therefore it has been assumed in the
recent times, that it was once a city, and it is believed that

the remains of it have been found. The question for decision
now the city is actually the same, this question can be decided

decided. It was once a city, and it is believed that at the time when
Henry I extended his network of cities and castles over Germany

now, this will not be a case. Natchez historical remains
of which do not exist, and that Henry I, who gave out

to Natchez came in 1050 and 1051, is first mentioned the city
the (Natchez). Of the city itself mention is made also later.

It is thus the case that the city of Natchez
than it was mentioned for the first time.

the city of Natchez, which was first mentioned in 1050 and 1051, is
and it is thus the case that the city of Natchez

as particularly placed in the 13th century by the Natchez

strengthened by towers; for although the view of the Schedel Chronicle shows us a rich series of towers, such as the city of Casimir could never have had. Doubtless the means never sufficed to assure this strengthening of the city wall.

Note 26. See Schedel. Liber chronicorum, etc. Nuremberg. 1493.

Note 27. "Skolke" in German = rock.

33. Nuremberg.

The example given above by representing the development of the city of Cologne, essentially closed with the 12th century, even if the details of the city fortifications partly belong to a far later time. If then Cracow affords an example in which the centre of gravity of the plan lies in the 13th century, and the fortifications are substantially to be regarded as a work of the 14th century, we now still have to give as an interesting example a city, whose development in area continued to the close of the middle ages. Such an example is presented to us by Nuremberg, whose plan (at the scale of 1 : 12000) is given on the adjacent Plate.²⁸

Note 28. From that published by the Society for the History of the City of Nuremberg, the plan compiled by M. Boch.

From the broad valley of the Pegnitz rises a hill of rock, whose western portion falls abruptly, while the eastern joins the slope extending from the foot of the hill into the plain. With its broad top, this must be taken as one of those prehistoric walled castles, mentioned above, that presented a particularly adapted area, and therefore it has been assumed in recent times, that it bore such a one, and it is believed that remains of it have been found. The question for decision, how far this is actually the case, lies outside our present problem. In any case can be no doubt, that at the time when Henry I extended his network of cities and castles over Germany, this hill had a castle. Reliable historical statements of this do not exist, and first under Henry III, who gave out documents there in 1050 and 1051, is first mentioned the castle (castrum). Of the city itself mention is made much later, although no doubt can exist, that it also had long existed, when it was mentioned for the first time.

This castle, which aside from later alterations and additions is preserved in a rebuilding of the 12th century, will be thoroughly treated later. Its access lay on the southeast

so that naturally the first settlement lay around the eastern side of the hill, and the road from the gate of the castle to the water in its upper part formed the chief artery of traffic. It is designated in our plan by its old name of "Under the Fortress". From the western end of the castle to the south end of this street, where church S. Sebald now stands, there was a steep street down the slope under the name of "Bag" street, with some little connecting alleys between the streets running from west to east in slight curves. This group is hatched darkest in our plan, and thus attracts the eyes at once as the beginning of Nuremberg. It is interesting, that still today the names of upper and lower "Smiths' alley", "Grocers alley", "Soldiers alley", allow the relations of the population to the castle to be recognized. The northwest angle of the city is designated as the "Gate of Zoological Garden", evidence that once a zoological garden was there at the foot of the castle, which must have existed in very early times, since history knows nothing of such a one. On the south side of this oldest architectural group stands the older chief church of the city, the Church S. Sebald, which by tradition is likewise placed at a very early time. Yet without any historical proof are we, as to when that architectural group extended south to the Pegnitz; we might therefore assume for it a very early time, and have therefore drawn on the plan the enclosing line below. Certainly neither in the city nor in the castle would one refuse the enjoyment of fish; mills could only be erected on the water, and we cannot conceive a city without the laundry women at the bank of the river. Certainly this lower part lay in the flooded region; the place where the Augustinian monastery was built later, the frogpond was a swamp, and the meadow on which farther away in the 14th century was erected the Hospital of the Holy Ghost, may in the 11th have extended over the present marketplace. Yet ruins of buildings are found, that doubtless belong to the 12th century, at certain houses on the west side of the market, and when some years since the houses south of the city hall were newly stuccoed, the old stucco therefore being removed, there appeared on the entire length of the facade those characteristic window galleries of the 12th century, which we shall later know better. If the city already in the 12th cen-

century had extended over the Pegnitz is not proved, yet is nowise impossible. To the beginning of the 13 th century belong parts of church S. Clara, that lies tolerably distant from the water, thus then in any case finding itself outside of the city fortifications.

What now concerns the city fortifications is that neither have any remains been preserved, nor have we any reliable historical statement. Tradition already knows of an "extension" of the city in the 12 th century. In the year 1105 a "siege" and "capture" are mentioned, as well as in 1127. The Scotch monastery of S. Egidius founded by the emperor Conrad lay outside the city, which must have been enclosed by wall and ditch, judging from all these events. Its perimeter may perhaps not have always been the same; certain parts may have been gradually included, others remaining outside as suburbs. These portions were now enclosed by one wall, that on our plan clearly appears as the second phase of the development, so many remains of which are preserved today, while others were only removed a few years since, about which so many documentary statements exist, that in their entire course they can be accurately determined. But none of these documents gives us the time, when the enclosure was commenced. The existing remains are from different times. As the oldest is represented the lower portion of the "white tower", the gate tower at the most western end of the city on the south, i.e., the left bank of the Pegnitz, which belongs in the 13 th century. But at the time of its erection already existed the house of the Teutonic order. Since this was founded in the beginning of the 13 th century, and did not lie within the wall mentioned, that may have been erected earlier; only even the gate being restored in the 13 th century, and the tradition be correct, which places the building of this second wall in the time of the Hohenstaufens, when it must certainly be assumed, that it was later gradually and completely rebuilt; for what if it exists, excepting the few remaining parts mentioned on the white tower, clearly shows by its forms the 14 th century as the time of its origin. The so-called "debt tower" on the island of (chütt, that may be clearly recognized on our plan, shows by an inscription of the year 1323 as the date of construction. Other parts are still substantially later. The gen-

general course may well be followed: -- earth and wood may have served as materials for the wall in the 12 th century; in the 13 th and 14 th centuries stone construction may have gradually appeared in their places. Meanwhile before the gates also this wall in the ordinary fashion may have formed the suburbs, that it was necessary to include, and still in the 14 th century men began, first indirectly the completion of the rebuilding of the inner city wall, the erection of a new enclosure, that consisted of a doubled wall and a ditch, and at the beginning of the 15 th century was at least substantially complete, even if certain parts were later added for strengthening, or in consequence of a simple rebuilding received their existing form. Such rebuildings occurred even in the 16 th and 17 th centuries, so long as men held it possible to adapt the fortifications of the 14 th century by such structures to the needs of that time. It is worthy of note, that at the close of the 14 th century men nowise did men think of a abandoning and destroying the second serving till that time, according to the plan of the third new and extended fortifications. This was rather still carefully retained even in the entire 15 th century. Even at the close of the 15 th century the internal "Laufer gate", one of the principal gates of the principal gates of this internal line of walls was built anew. The portion of the city lying outside this inner circuit of walls was always regarded as a "suburb", although it was enclosed by the massive external wall, and although in 1499 the sale and customs hall was already built in the city moat of the inner enclosing wall, and in the course of the 16 th century the house of the Landauer brothers -- and the arsenal interrupted the inner fortification. The patricians indeed had great gardens within it, especially on the east side; there were found the Catherine, Martha and Clara convents, as well as the Carthusian monastery and the house of the Teutonic order. But mostly only persons of little importance dwelt there. Those wealthier all remained in the interior of the city. This arrangement, as our plan shows, sheltered at the time the greatest prosperity, thus in the middle of the 16 th century, about 40.000 inhabitants, and in the 15 th about 2.2.000 men may have been available for the defense of the city.

34. External Appearance of the Cities.

The earliest appearance of such a fortified city was probably
made in the early part of the 17th century. The walls were built of
at first made, over which were built the stone walls, and the
which some of the early works were built, behind the walls being
high roofs and great bodies of houses and public buildings.

There was a city extended up the slope of a hill, and the
owned at top by a castle, or whether in another part of the
is or extended in the plain. The city presented a very
large view, and was the most important, and filled the
with pride. And if the importance of these lands to which
before the city was built, loved their inheritance for its
mills, then others loved their own for its solid position.
as, which presented the most other visible features. This
disappearance of the city was not lessened, when
in the 18th century the city was again built on the
new, and the development of the city of Albany in the
and the city of Albany.

There was from the middle of the 17th century a very important
and the city of Albany. The city of Albany was the
of views, that presented for us the character of the views of
city. We refer the reader in particular to Hartman's description
of the city, that appeared in 1717; and we can also find a
views of the city presented later, that appeared in 1717, and
the city of Albany, and the many views of the city, that
Merian described in the middle and second half of the 17th
century, are however always adapted to the city as it was
the middle of the 17th century. Many small cities were yet
and the views of these cities, which had already appeared
and the city of Albany, we can still easily find the
later as removed, the city was as removed.

See Note 26, p. 24.

See Note 26, p. 24.

See Note 26, p. 24. According to Merian's view of the city
of Albany in 1717, the city was built on the
by the city, at the foot of the hills, and on the
the city (2) being the city of Albany, on which Merian does not

34. External Appearance of the Cities.

The external appearance of such a mediaeval city was extremely imposing. The walls with their numerous towers, the great city moat, over which bridges led to the gates, and beyond which some outlying works projected, behind the walls being high roofs and great gables of houses and public buildings, partly furnished with towers, from the midst of which arose proud churches with lofty towers, presented a surprising view, whether a city extended up the slopes of a hill, that was crowned at top by a castle, or whether in enclosed several hills or extended in the plain. Each city presented a characteristic view, that amazed the foreigner, and filled the native with pride. And if the inhabitants of these lands to which nature granted mighty hills, loved their fatherland for its hills, then others loved their own for its splendid appearance, which presented the proud cities visible therein. This picturesque appearance of the cities was not lessened, when in the Renaissance period towers and gables assumed other forms, and the development of the nature of war in the 16th and 17th centuries made intrenchments and bastions necessary around the cities.

We have from the middle ages themselves but a few approximately correct representations of cities. But we have the ideal views, that reproduce for us the character of the views of cities. We refer the reader in particular to Hartman Schedel's Chronicle,³¹ that appeared in 1493; but we can also trust views of cities produced later; their character does not change so rapidly, and the many views of cities, that Mathias M Merian published in the middle and second half of the 17th century, are however always adapted to transfer us back into the middle ages. Many small cities were yet entirely unchanged; but the views of those cities, which had already experienced substantial alterations, we can still easily regard the latter as removed, the vanished as restored.

Note 31. See Note 26, p. 34.

35. Examples. Reichenweier.

Fig. 7²⁹ according to Merian gives the view of the little city of Reichenweier in Alsace, that lies in the plain surrounded by vineyards, at the foot of the hills, that on the right side (2) being the Schwanberg, on which Merian does not

fail to emphasize, the noblest wine of the country grows. We see the regular course of the walls, that on the north side next the hill being only single, but doubled on the others and enclosed by a moat. At the east side stands in the wall the castle marked 1, through which the road leads, here by the lower gate again out through the upper gate 5, after passing through the marketplace 3. Three churches stand close together at the north side. To the city walls, moats, towers and gates we shall return later.

Note 29. From Merian, M. Topographia Alsatiae etc. Frankfurt-a-M. 1663. p. 43. (The first edition appeared in 1644, a supplement in 1654.

36. Zellenberg.

Not far from Reichenweier lies on a hill the small city of Zellenberg (Fig. 8), ³⁰ high enough to see far over the plain. One views in the distance Colmar A, Breisach B, beyond being the mountains of the Breisgau C, in front at the foot of the city being the villages, Osten D, Hausen E, Mittelweier F and Benweier G. The glance shows that the entire importance of the little city lies in the castle, and only comprises the small settlements of citizens belonging thereto, who have located themselves on the sloping plain before its gates. The walls of the small city even form an external enclosure before the castle gate. At the time that the view was taken, they were just at the side where attack was easiest, already partly covered by houses; yet one angle shows a round fortress tower, and the gate may be recognized, so that just this side was originally very strong.

Note 30. From the same. p. 70.

37. Montbeliard.

Particular interest in many respects is afforded by the view, which Merian gives of the city of Montbeliard, that on the old border of Germany next Burgundy and likewise located in Alsace, belonged to Wurtemberg for centuries, but in which was found a very mixed population, so that by the effect of the peculiarities of the different races resulted in its streets a picturesque diversity. (Fig. 9). ³² We see that river and hill combined to give the city a strong location, but also a picturesque appearance. The city consists of two parts, the old city and the new city. The first is in the plain, ex-

extending to the foot of the castle B on a hill, and is
that there is reason the city divides in two parts, that part
through the moats, one line of which separates the old city
from the new city, while the other flows around the old city,
and these again unite at the lower bridge over the little riv-
er flowing into the same. The bridge over the stream
leads into the new city, from which it is separated, that is
the latter is not much later than the old city. However the
moat B rising higher than the castle must be fortified, a
moat the enemy were given opportunity to enter there a city
and dominating castle. The tower, that carries the name of St
George, is therefore very old, while from 1548 onward the top
of the hill beyond was fortified in the new manner, since the
tower alone could no longer fulfill its purpose. The view show-
ing, that the inner city wall itself, for the fortress built a
already in the 17th century was covered by houses, that only
a projecting second line and the position of houses. The pos-
sibility at the castle already belongs to the time directly
after the middle ages.

Note 32. From the work mentioned in Note 29, p. 35.
Note 33. In relation to the description of the castle. Is this the

most interest in our view relates to the castle. At the en-
trance of the city and at the opposite end it was furnished
with bastions, that could be raised, in order to break the
connection. A square tower, entered which one must pass, dis-
cuss the entrance. On the city side seems to have been a
court enclosed by walls, which one must cross to enter the

Note 34. From Norton, M. Topographia Helvetiae, Rhodora et
35. Locum.

of the city of Lucerne, two parts of which are separated in
first. 11 and 12 from a great copper containing of the end of
the 16th century. Located at the outlet of the Rhine from the
Lake Vierwaldenstaetter, the city extends along the bank on a
steep slope, on the eastern and upper part being surrounded
by a wall furnished with towers. A part of the city, whose

extending at the foot of the castle Ξ built on a hill, and is surrounded by walls and a partly double moat fed by a brook, ³² that where it reaches the city divides in two parts, that pass through the moats, one line of which separates the old city from the new city, while the other flows around the old city, and these again unite at the great bridge over the little river *Alaine*, flowing into the same. The bridge over the stream leads into the new city, from which it is recognized, that the latter is not much later than the old city. However the heights *B* rising higher than the castle must be fortified, unless the enemy were given opportunity to erect there a city and dominating castle. The tower, that bears the name of *La Groche*, is therefore very old, while from 1598 onward the top of the hill beyond was fortified in the new manner, since the tower alone could no longer fulfil its purpose. Our view shows, that the inner city wall itself, for the greatest part already in the 17th century was covered by houses, that only a projecting second line had the problem of defense. The round bastion at the angle already belongs to the time directly after the middle ages.

Note 32. From the work mentioned in Note 29, p. 35.

Note 33. In Merion it is designated as *Rigole*. Is this the name? *Rigole* signifies moat.

Most interest in our view relates to the bridge. At the entrance of the city and at the opposite end it was furnished with drawbridges, that could be raised, in order to break the connection. A square tower, through which one must pass, defended the entrance. On the city side appears to have been a court enclosed by walls, which one must cross to enter the city. ³⁴

Note 34. From Merion, M. *Topographia Helvetiae, Rhaetiae et Valesiae*, etc. Frankfurt-a-M. 1642. Edition of 1654. p.90.

38. Lucerne.

Likewise especially interesting by its bridges is the plan of the city of Lucerne, two parts of which are represented in Figs. 11 and 12 from a great copper engraving of the end of the 16th century. Located at the outlet of the *Reuss* from *Lake Vierwaldstätter*, the city extends along the bank on a slight slope, on the eastern and upper part being surrounded by a wall furnished with towers. A part of the city, whose

NOTED: CORNER IS TYPICALLY ENCLOSED BY A WELDED FRAME.

northwest corner is likewise enclosed by a wall with towers, lies on the opposite side of the lake, there narrow. This wall on the land side of the other portion of the city directly adjoined the wall of the principal side descending from the hill. Next the lake both parts of the city were always open. This was considered a sufficient obstruction to a hostile surprise. But a bridge was also built across the lake as a direct continuation of the western city wall, and so that the covered way on it could serve as a defensive gallery, while obstructions, indeed chains according to the custom of the time, between the bridge piers made the entrance of hostile ships and boats impossible into that part of the lake on which the city lay open. At each end of the bridge was found a formal castle; on our illustration certainly both have already laid aside their defensive character. At the southern end of the main side of our city lies the principal church with two towers, surrounded by monasteries and separately fortified. While the beginning of this fortification formerly joined at the shore of the lake the end tower of the city fortification, the wall made a great curve around the monastery and again extended at the end to the lake, so that even this separate fortress was too open to the lake. From its end extended likewise one of the first mentioned bridges across the lake to the castle, which terminated the latter. As quite particularly characteristic, we therefore have to regard these bridges, that are properly nothing but walls extended through the water, which with the walls of the land side together compose the enclosure of the city.

Note 35. From a copper engraving of Martinus Martini. (16th century).

If we have just spoken of a formal castle on this bridge, there were only castles for strongly defending this part of the course of the wall outside, but not at all for holding the city itself subject. Such a castle Lucerne indeed could never have had, which is easily explained by the history of the confederacy, to which Lucerne belonged.

39. Sitten.

Extremely picturesque is the location of the city of Sitten (Sion) in Switzerland (Fig. 10)³⁴, where the two lofty conical hills made necessary the arrangement of two separate cas-

castles, the city lying at their feet. Very interesting are of works, that from these castles extend down to join the city wall in the plain, partly again forming little castles by themselves, as designated by W, C and D.

Note 34. From Merion, M. *Topographie Helvetiae, Rhaetiae et Valentiae*, etc. Frankfort-a-M. 1642. Edition of 1654, p. 90.

40. Conclusion.

The history of the development of every city again presents other peculiarities. We cannot possibly examine all cases. The most important questions, that intrude in the consideration of other cities, must be similar to those shown in our examples. Much will result from the consideration partly left by us to castles; moreover the details will find their treatment in later chapters. We here close the Chapter on the arrangement and fortification of cities with an invitation to friendly readers to devote thorough attention to all things in this domain, that may appear in their vicinity. If they devote themselves to this, they will obtain abundant incentive and instruction; they will especially recognize, that in the entire realm of architecture the purpose to be served by a building, that determines the external appearance, that it was not the intention to produce fanciful forms, wherever it was determinative in military architecture, that rather what charms us is the result of the complete fulfilment of the purpose, by which the structures become characteristic and individual.

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Chapter 5. The earlier Plans of Castles.

41. Choice of Location.

What was said at the close of the preceding Chapter is met with in a still higher degree in the consideration of the castles, each of which is individual with a special character, that is exclusively determined by the locality and the definite problem, which the castle must fulfil just at the place, where it was erected. It was the first requirement, that the strength and safety of every castle should exclusively determine its plan and arrangement. The comforts of life in the castle could only find consideration so far as incidentally possible without injury to the main purpose, and the chief comfort was always the feeling of security, which the castle gave to the occupant. This already came in consideration in the choice of the place. If today we see the ruins of a castle romantically enthroned on the apex of a wooded hill, we experience pleasure in the magnificent location; we study the harmony of the lines, which the castle shows with the character of the region. When we then from above look far over the land, and enjoy the splendid view, we are indeed of the opinion, that the beauty of the place required its selection, and that the castle be placed just there. We perhaps find our own time prosaic and dry, that prefers the plain to the hilltop, and praise the romantic feeling of our ancestors, who felt "that freedom on the mountains", and envy them the grandeur, that they had in part. Indeed yes, it is beautiful above; but if we observe what exertion and expense are necessary, that the owner of a modern villa, which he locates in castle form on the mountain, to make for himself and his guests life comfortable there above; if we calculate how much more it has cost for materials and workmen to be taken up the steep mountain, what it has cost to build the foundation walls, what massive structures must be erected to obtain but little room; it already shows itself to be a costly pleasure, that the possessor has made for himself. If we now question, whoever passes not merely some months of summer above, but has to enjoy the hard winter time above, as it comes to him, then will he no longer speak to us of pleasure. But we consider how such a mediaeval castle did not at all offer the arrangements for producing that comfort of life, which we now regard as self-

self-evident; if we now indeed reflect, that a castle could or must offer this at all; then shall we easily recognize, that no vestige of the romantic lies at the basis of these castle buildings, that rather only hard necessity led to erecting them where they lie, to place them where they meet us. But if we then see, how all come from the purpose, then shall we have a pure enjoyment of the practical sense, and of the mastery with which all is arranged.

In the selection of the place was only determinative the necessity to fortify the location, and so far as a choice was free, it was only concerned to find the place, which offered most protection against attack and the greatest capability for defense. Men did not seek hills, but went only as high as compelled. If we study the plans of castles, we then find that in the vicinity of many castles are found far "more beautiful" places; they were not so suitable and therefore were not chosen. Also there are only certain ones, that are enthroned on the hills and appear romantic to us; others lie in the plain, just like a modern factory, since they were just as necessary in the midst of the plain as on the mountain.

42. Accessibility.

Where possible, men sought to make them concealed and inaccessible; in no case did one endeavor to make the way convenient to them. No high road must be arranged, on which one might drive up with six horses, as to a modern villa with towers in the high mountains. On the contrary one should reach them with as much difficulty as possible; ride there through defiles and over hill crests, the way should be steep and narrow. For whoever would go there by duty or friendship, no road was too difficult; but whoever came with hostile intent should find it troublesome, and the difficulty should even be increased, and where it was even level, the defenders of the castle already dominated the road by loosened stones and shots, by tearing away certain parts of the road, by obstructions placed thereon so as to injure and delay as much as possible the approaching enemy.

43. Enclosure, Moats, etc.

But the enemy must also nowhere on his way be out of sight of the defenders; he must be observed in all his movements; but also he should nowhere find an object, behind which he

could easily project himself from being possessed by the defense.
No drilling could be in the vicinity, which could afford
protection to the surrounding assailant; every building and col-
low wall be dominated by the castle itself and the defendant.
The vicinity of the castle also did not concern the defendant
view of solidified fortress, as they now stand the ruins with a
must rather be completely naked. No trees must obstruct the
view from the castle, from which always watched eyes could
everywhere, that something suspicious did not show itself, or
that an enemy did not approach. No stone must show, so that
an enemy, even a single man, could conceal himself behind it;
and if sometimes in the castle there was a stone wall, it
must be destroyed all vegetation, even must the bushes be
quickly removed, as soon as the castle had to be made fit
for defense, when one must fear, that a dagger might approach.
Only what served as a hindrance was cleared and cared for. If
Plinius had made the first ground survey, and caused the
enemy to fall, and did not pay attention to them, Plinius was
convinced a hit, or even a threat in which he might be entan-
gled, were welcome; but even these must have been cleared before
as bushes and bushes, for an enemy to conceal himself behind
them. Since the elevated position gave advantages to the high-
ness, there was always retained at least a small elevation, so
that the enemy must climb uphill to the castle, and the de-
fense could position him downhill. There was no natural hill con-
sidered itself in the castle, a small elevation was artificial-
ly known as around the castle. There was no necessity a
removed as the surrounding terrain. There seemed to be no
swamp existed, and elevated more as for a castle, filled with
water if possible, too deep for armed men to pass through, a
small ditch around the castle, and in which the water was
difficult, and which was not deep enough to permit crossing.
The last part of the wall in general; for also was there here
for the castle, when the value for the city wall, that the
inner part of wall to be defended must stand in the most favor-

44. Ground form.

So far as always suitable, was agreed to first show places
on a small part of the wall in general; for also was there here
for the castle, when the value for the city wall, that the
inner part of wall to be defended must stand in the most favor-

could easily protect himself from being harassed by the defenders. No building must be in the vicinity, which could afford protection to the approaching assailant; every defile and hollow must be dominated by the castle itself and its defenders. The vicinity of the castle also did not present the romantic view of splendid forests, as they now adorn the ruins. All must rather be absolutely naked. No tree must obstruct the view from the castle, from which always watchful eyes spied everywhere, that something suspicious did not show itself, or that an enemy did not approach. No shrub must grow, so that an enemy, even a single man, could conceal himself behind it, and if sometimes in the deepest peace one for a short time omitted to destroy all vegetation, then must the neglect be quickly rectified, as soon as the castle had to be made fit for defense, when one must fear, that a danger might approach. Only what served as a hindrance was planted and cared for. Plants that made the rising ground slippery, and caused the enemy to fall, who did not pay attention to them, plants that concealed a pit, briars and thorns in which he might be entangled, were welcome; but even these must have too little height as hedges and bushes, for an enemy to conceal himself behind them. Since the elevated position gave advantages to the fighters, there was always desired at least a small elevation, so that the enemy must climb uphill to the castle, and the defenders could approach him downhill. Where no natural hill presented itself in the plain, a small elevation was artificially thrown up around the castle. There water was preferably employed as the obstructing means. Where neither brook nor swamp existed, men arranged moats as for cities, filled with water if possible, too deep for armed men to pass through, or moats whose bottoms were soft and muddy to make passage more difficult, but which were not deep enough to permit convenient landing from boats, and in which low reeds and other water plants obstructed navigation.

44. Ground Form.

So far as always suitable, men sought to find such places for castles, at which it was impossible for the enemy to reach a great part of the wall in general; for also was true here for the castle, what had value for the city wall, that the length of wall to be defended must stand in the utmost favor-

course was therefore the most favorable ground form; the more
 the form and narrow rectangular, elliptical or hexagonal for-
 m of castle extended, the less was the area, that is offered
 for the dwelling of the defender in proportion to the length
 of the wall, that must be defended. By preference there was a
 more or less extended area only on the sides of ditches, where
 there fell no attack, that they could not be attacked; by
 preference on the other hand the more favorable ground form
 was, where the defender could not reach the top of
 the wall, so that a possible greater portion of the wall was
 in the ditch, but not reaching to the ditch. But where
 the latter was necessary, since around it was a level surface,
 the walls thus being accessible from all sides, a small cal-
 culation shows, that a square of 328 ft. side, thus having
 1312 ft. length of enclosure, afforded 10,984 sq. ft. area;
 and for one sq. ft. of wall comes 27.12 sq. ft. of area for one
 side the square. The same ratio results for a circle 328 ft.
 diameter, with a perimeter of 1040 ft. and an area of 84,496
 sq. ft. A rectangle 104 x 820 ft. has a perimeter of 1760 ft.
 and an area of only 84,790 sq. ft., that is one sq. ft. of wall
 only 48.8 sq. ft. area; and the ratio is the more unfavorable,
 the narrower the rectangle; for if we take one 82.8 x 328 ft.,
 there results 121.8 ft. perimeter and 10,704 sq. ft. area, a
 ratio only 14.9 sq. ft. area for one ft. of wall. Similarly an-
 unfavorable is the ratio for a triangular ground form. If we a-
 ssume an equilateral triangle with side of 328 ft., there re-
 sults for 984 ft. perimeter an area of 45,009 sq. ft., that
 for one ft. of wall only 45.8 sq. ft. If we have the trian-
 gle, there results 775 ft. perimeter and only 28,816 sq. ft.
 area, that is only 30.3 sq. ft. for one ft. of wall; and this
 ratio even becomes more unfavorable, the narrower the trian-
 gle. Thus the square and the circle form the only favorable
 ground forms for a castle in the plain accessible from all
 sides. The circle form is the most favorable, in the case
 of the 10 and 11 ft. diameter, which are built of 40-
 42 and 44 ft.

42. Mounds (Walls).

favorable proportion to the number of defenders. A circle or square was therefore the most favorable ground form; the more the long and narrow rectangular, elliptical or triangular form of castle extended, the less was the area, that it offered for the dwellings of the defenders in proportion to the length of the wall, that must be defended. By preference thus men chose long extended areas only on the ridges of hills, whose sides fell so steeply, that they could not be ascended; by preference on the other hand men chose everywhere abrupt rocky precipices, where the assailant could not reach the foot of the wall, so that a possibly greater portion of this must only be watched, but did not require to be defended. But where the latter was necessary, since around it was a level surface, the walls thus being accessible from all sides, a simple calculation shows, that a square of 328 ft. side, thus having 1312 ft. length of enclosure, afforded 107,584 sq. ft. area; thus for one sq. ft. of wall comes 82 sq. ft. of area for housing the garrison. The same ratio results for a circle 328 ft. diameter, with a perimeter of 1030 ft. and an area of 84,496 sq. ft. A rectangle 164×328 ft. has a perimeter of 984 ft. and an area of only 53,790 sq. ft., thus for one ft. of wall only 54.6 sq. ft. area; and the ratio is the more unfavorable, the narrower the rectangle; for if we take one 32.8×328 ft., there results 721.8 ft. perimeter and 10,764 sq. ft. area, thus only 14.9 sq. ft. area for one ft. of wall. Similarly unfavorable is the ratio for a triangular ground form. If we assume an equilateral triangle with side of 328 ft, there results for 984 ft. perimeter an area of 46,609 sq. ft., thus for one ft. of wall only 47.3 sq. ft. If we halve the triangle, there results 7763 ft. perimeter and only 23,316 sq. ft. area, thus only 30.3 sq. ft. for one ft. of wall; and this ratio ever becomes more unfavorable, the narrower the triangle. Thus the square and the circle form the only rational ground forms for a castle in the plain accessible from all sides. This ground form we also then see employed in the castles of the 10 th and 11 th centuries, which are built of wood and earth.

45. Mounds (Motas).

Such castles have remained in England in considerable number, ³⁶ as well as in France, indeed not in their original form

to 98.4 ft. with a depth of 9.5 to 10.5 ft. The water was taken from a ditch excavated around them, which was connected with a well and pump. Where a natural hill was found, sand

... from the old walls. But now we need not be so

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1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 26

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that certainly in fact are not very common at night. We refer to the fact that, in the course of the investigation, it was found that the number of birds seen at night was very small, and that the birds seen at night were not very common at night. We refer to the fact that the birds seen at night were not very common at night.

but still clearly enough recognizable. They bear in France the name of "mottes" (mounds of earth), in England are termed "mounds"; the mediaeval Latin expression is "mota". In Germany, where men have indicated in the last decades a considerable number of them, there has been introduced for them the not entirely correct name of "spitzwall" (pointed wall).

Note 36. See Clark, G. T. *Mediaeval Military Architecture in England*. London. 1884.

Such mounds with flat tops have an upper diameter of 32.8 to 98.4 ft. with a height of 9.8 to 42.7 ft. The earth was taken from a ditch excavated around them, which was correspondingly wide and deep. Where a natural hill was found, that only required to be dressed off, and it was naturally used by preference.

The development of these so-called mounds (spitzwalle) follows from the old walled castles. But here we need not go back into the earliest period; we find starting points quite tolerably late.

Among the early mediaeval earth castles of Germany in any case is that arranged in the older manner, the Pipin's castle ³⁷ belonging about to the 9th century and near Lehr in the county of Stade, which is one of the most interesting. In circular form, it occupies the southwest part of an elevation surrounded by a moor and swampy meadows, washed by a brook at the south. It has a diameter of about 131 ft. and is enclosed by a wall of earth, which at the south has a height of 16.4 ft. and one of 32.8 ft. at the north. About 33 ft. outside this wall it is surrounded by a second lower one, which is only open at the south, where the brook afforded sufficient protection. The entrance lies at the north side, protected by a hill lying outside. At the northeast adjoins a doubled outwork. About 984 ft. eastward lies the so-called heathen city, an oval enclosing wall of 263 × 131 ft. diameter, that rises about 6.5 ft. above the ground. It is surrounded by swamps, between which is inserted a second wall at the north.

Note 37. See *Zeits. der Hist. Verein für Niedersachsen*. 1870. Plan on Plate 8.

This plan, that belongs to the last period of those earlier walled castles, is now opposed by the so-called "pointed walls", that certainly in part are not very pointed or high. We refer

that relate to the words of the Romans and Greeks, as well as the mode of interpretation of German, known and of the late

to the Drusen or Caloren hill³³ located about 1 1/4 miles n northwest of the well known Roman camp of Saalburg near Hamburg-o-H., a partly circular artificial hill, whose level top is 42.6 ft. diameter and only 6.5 ft. higher than the enclosing ditch 43 to 49 ft. broad, whose centre slope is somewhat filled up, so that the water of a little brook can be retained within it.

See Cohausen. Die Wollburgen, Landwehren und alten Schanzen des Regierungsbezirkes Wiesbaden. Ann. d. Ver. f. nassauische Altertumskunde u. Geschichtsforschung. 1879. p.343.

The Gewanne hill³⁹ near schwalheim, 0.9 mile north of Friedberg, shows innermost a hill 13 ft. high of 102 ft. diameter, which is surrounded by a ring 43 ft. wide and only raised about 1.6 ft. above the external ground, that is again surrounded by a ditch 33 ft. wide, into which water can be introduced. The entire plan is still enclosed by a ring wall, that has a diameter of 394 ft., but is only about 2.5 ft. high.

Note 39. See the same.

If we further name the Altburg near the Haselheck⁴⁰ 6.9 miles northwest of Friedberg on the old Butzbach road, where on an elevated heath gently sloping eastward is found a square heap 52.5 ft. side without a wall, that is surrounded by a ditch 39.4 ft. wide and now 8 to 13 ft. deep, partly made a swamp by flow of water. If we reconstruct the original section according to the existing dimensions, so that the excavation of the ditch formed the heaped middle hill, then this would already have a considerable height of about 33 ft. above the bottom of the ditch.

Note 40. See the same.

Characteristic of the seats of the nobles of the 10 th to 12 th centuries is the castle of Alt-Sternberg (Westphalia);⁴¹ the area has a diameter of about 131 ft., is surrounded by a moat, has a horseshoe-shaped outwork with ditch and several works, but nowhere exhibits a vestige of masonry.

Note 41. Köhler cites Holzermann, L. Lokaluntersuchungen, that relate to the wars of the Romans and Franks, as well as the mode of fortification of Germans, Saxons and of the late middle ages. Münster. 1878.

These earthworks preserved everywhere in Germany, whose number is not small, were now finished with wood, whose arrange-

arrangement can easily be supplied in spirit according to the statements of the writers of that time; for such earth castles were still erected until in the 12th century, and were not out of use even in the 13th. A description of castle Merchem near Dixmuyden (Flanders) is preserved to us in the sketch of the life of the blessed bishop Jonannes of Terouenne,⁴² who died in 1130, that Jonann de Collemedio left. The bishop there visited about the year 1115 the castle standing beside the church, that the owner had built "many years before according to the custom of the country", and that was very high. It was indicated as the custom of the richer and more prominent of this region, "who particularly engaged in war, that to be secure from their enemies, to conquer their country associates, and to subjugate their inferiors", to raise a wall of earth and surround it by a deep and wide ditch. The top of the wall⁴³ they covered by a close fence of split logs, that was strengthened by towers arranged in a circle. In the middle of the fence was built a house or castle,⁴⁴ from which all could be overlooked. Access was only possible by a bridge, that rose on 2 or 3 piers from the outer edge of the ditch high above the moat to the height of the wall and to the gate.

Note 42. See Bollandus, J. Acta Sanctorum. Jan. Vol. 2, p. 799. -- Reprinted in Clerk. Vol. 1. p. 33.

Note 43. In consequence of an erroneous translation, a false statement is also circulated, that this palisade fence was placed at the base of the wall.

Note 44. Domum vel arcem. -- Köhler translates; blockhouse or stone tower.

We owe this description to the fact, that the bridge at Merchem, that rose 30 ft. above the bottom of the ditch, fell when a great multitude of men were on it on the occasion of the presence of the bishop thereon.

46. Later Earth Castles.

However perishable were the separate buildings, the mode of construction yet lasted long. In such manner were still erected the castles of the Teutonic order in Prussia until the middle of the 14th century, although the order had already commenced there in the 13th century to build stone castles.

These Prussian earth castles consist of a square raised about 6.5 ft. above the ground, with sides of about 33 ft., for

the construction of which natural hills were utilized, where existing, their tops being removed to extend the terrace, about their edges being made a small earth wall. To this nucleus of the fortification adjoined other low lines of walls, that either rise separated by ditches and entirely surrounded the former, or were only attached at one side, according as the ground required. These earthworks are mostly enclosed by an abattis placed before them. (Felled trees, etc.).

As confirming the former use of wood, where a castle was burned, there are occasionally found charcoal remains of the burnt palisade fence. Thus at the Wallburg at Dargen (Circle of Fischhausen) along the entire upper edge.⁴⁵

Note 45. Köhler cites Baron von Boenigk. Ueber Ostpreussische Burgruine in ihren einzelnen Theilen. Königsberg. 1880. -- This is evidently a separate impression of the Essay with the same title in Reports of Sitzings of Soc. of Antiq. of Prussia. 1879 - 1880. p. 57 et seq.

47. Stone Castles.

Our readers in the circles of architects would doubtless be little grateful to us, should we treat these earth castles more fully, however interesting may also be this theme. We therefore refer to those colleagues, who have particularly interested themselves in them, to the sources cited and Köhler's treatment of the objects, that we must now leave, though these earthworks still form the basis of monumental mediaeval castle architecture. The German mode of building in wood gave place first under the influence of the Roman among these German races, who were attracted to the south. Goths and Lombards had not merely learned stone construction in Italy, but also employed it in a comprehensive way, just as the Visigoths in southern France and Spain. In northern France and on both banks of the Rhine the Franks had likewise joined their stone construction to the work of the Romans. But in the remainder of Germany it only slowly became at home, and only under the influence of the Church, thus being connected with Italy. Meanwhile in the course of the 10th century in Saxony many stone churches originated; in the 11th century stone construction for churches became the rule everywhere, and also gradually found admission in secular architecture. We know that where in later time castles of the old stone construction were

yet preserved, or where men employed palisades in general, the necessity of frequent removal made itself felt as a disadvantage, and thus men here and there became tired of wood construction, and therefore came to place gradually stone walls and towers instead of rows of palisades and wooden towers, which were less perishable not only in peace, but also resisted fire in war, by which the enemy sought to destroy the fortifications. How and when this change was completed can scarcely be proved; in any case it occurred but very slowly and gradually, in France ⁴⁶ earlier than in Germany, here in any case at the same time as the introduction of stone fortifications also in city architecture, and thus in fact may a castle show considerable remains of walls of the 11 th century. Were there indeed the great contest between royal and feudal supremacy, that gave castles a different importance, and the master of the castle, who was now accustomed to regard his castle as his own property, that hitherto he must consider a fief, this may have caused him to devote more attention to it, since also he could no longer count absolutely on combination with his neighbors, but each one must also protect himself against them, fear sudden surprises, and have to see after greater strength.

Note 46. A. de Caumont mentions in "Abecedaire ou rudiments d'archéologie" as such a stone structure of the year 1047 the castle of Du Plessis Grimault (1 st edition, p. 331 et seq. -- In Germany we have near Vibbel on the island of Middel a hill 18 ft. high and 85 ft. diameter, that is surrounded by a terrace 49 ft. wide and a ditch 59 ft. broad. The "pointed wall" itself is enclosed by a wall with two towers, within which stand ruins of different buildings, and also many later castles show in their plans so fully the character of the so-called pointed walls, that we must indeed assume, that they are rebuilt mounds (motes).

If we also thus find in a series of castles parts, that belong to the 11 th century, it must still be hard to designate entire castles, that in general appearance are characteristic of the 11 th century, since only for few the monumental rebuilding or construction in the 11 th century must have been entirely completed, without that where this was perhaps the case, changed conditions in later times had required again a

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rebuilding or a substantial extension.

48. Oldest Stone castles of Germany; Mounds near Rudesheim.

The character of the oldest stone castles of Germany is best followed at those two castles, that in Rudesheim stand beside each other at the lower end of the city, but certainly also not remaining in their original form.⁴⁷ These are the Oberburg and the Niederburg, whose plans (at the scale of 1:12,000) are given in Fig. 13,⁴⁸ where we have placed these two plans approximately beside each other, as the castles actually stand. We believe that we do not err in assuming, that at the time when both castles were erected, the bed of the Rhine was even wider than today, so that the Niederburg, that today stands entirely dry, was still surrounded, and therefore this is to be regarded as a water castle, which men could only approach in boats, unless a bridge led from the land to the entrance, which in any case was so constructed, that in case of attack a part of it could easily be broken away.

Note 47. Drawings and description by A. von Gohausen in *Cent. d. Bauw.* 1886. p. 303, 310 -- also in: *Ann. d. Ver. f. Nass. Alt. u. Gesch.* Vol. 20. p. 11 et seq.

Note 48. From von Gohausen.

The Niederburg had no moat, since it stood in the water. It is not an absolutely square plan. Yet it may be recognized, that formerly only one strong wall formed the enclosure, and a tower stood in the northwest angle beside the entrance. Now the structure is only preserved in a changed form, that we might ascribe to the end of the 12 th century, and that will be fully treated later. Therefore it is then very difficult to prove what originally existed. It is determinative for us, that without a principal tower a castle of the 11 th century in general is not at all conceivable, and so we believe it necessary to assume, that the middle tower, which still exists, already belongs to the arrangement of the 11 th century, as von Gohausen opines, even if it be somewhat later in its present appearance. When on the other hand the last named author assumes, that in the now vacant southeast angle a similar tower stood, like that yet standing in the northwest corner, we see no compulsory reason for this, since also the two other angles have no towers, and perhaps the existing one, that protects the entrance, must be regarded as alone existing.

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The shore of the Rhine in no case remaining the same always. If we have also drawn a straight line in our plan on the shore of the Rhine, then this is to be regarded as very changeable.

But in no case did the Rhine extend to the Oberburg; this rather lay entirely on firm dry ground, as proved by the ditch extended around it. Of this Oberburg indeed nothing more above ground is to be seen, excepting the tower against which is built a modern villa; but underground is still preserved the entire ditch, that was recently entirely open, but was vaulted over some decades since, and serves as a storage cellar for splendid Rhine wine. Also in the Museum at Wiesbaden exists a well made model in the 17th century, that in spite of many later buildings visible thereon, still exhibits the ancient appearance. This Oberburg is a true mound. The enclosing wall is approximately a square of about 98 ft. side, encloses a terrace elevated somewhat above the external surface, which indeed must have been raised originally 5 to 6.5 ft.; instead of an earth wall, a masonry wall surrounds this terrace. The enclosing moat has a varying averaging 33 ft. The bridge was at the east side. Not quite at the middle of the terrace but rather displaced toward the west stands the tower. Directly attached to this on three sides were vaulted structures, that indeed bore a platform. A wall before it also inclosed an inner court. This castle must have appeared as an attempt at restoration shows it in Fig. 14.

49. Attempts at Restoration.

We have a series of attempts at restoration to be given. It is therefore permissible to say some things for this first one, which also apply to all others. All these attempts, whether proceeding from the author of these lines or from others, are hypotheses, and the honored readers will accept them as such; they will carefully distinguish between such hypotheses and drawings of the existing constructions. The author never neglects to state what source he has used, where the drawings of the existing construction are to be found, according to which he has worked, and for whoever wishes to decide on what he has given there, I do not omit to compare these original sources. Where my own differing drawings are the basis, this will always be noted. Men may have a different opinion of the importance and worth of such attempts at restoration. Men have

actually reproached the author of the "Dictionnaire raisonnee de l'architecture francaise", that he has allowed too much play to his imagination. Certainly with injustice; for nowhere has he given his "fancies" as drawings of the existing condition. It is then the affair of whoever will use his work to investigate, how far he must go therein, and now on the ground of better sources or even different opinions wishes to establish other hypotheses, will not be restricted by Viollet-le-Duc's work therein. He has utilized besides drawings of the mutilated condition of everything, and this has also been attempted by the author of these lines, what on other contemporary structures serving like purposes has been preserved in better condition, from which it must then be assumed, that was the rule at that time; for even if each structure is also an individual, then it still belongs to a class and family, that have their common peculiarities, just as well as the classes and families of the animal kingdom, and if we know that certain insects have six legs, we must assume that also those originally had six legs, that we find dried and robbed of a part of their legs with but three still in the cases of a collection of natural objects. We shall have no particular regard for the criticism, which still requires from us the proof, that these existing examples did not formerly have but three legs in general. Just so is it for the buildings, when we must depend on better preserved examples, for the assertion, that there were originally six, just like the natural historian. But whoever now, because once the insects of his case had but only six legs, is satisfied with this fact, and will not trouble himself further about it, how they were originally, if he must appear as instructing, such as the problem of the author, will scarcely give his readers a correct idea of the insect world, and even so it is necessary, if one will rightly estimate the importance of the existing remains; and will have a proper opinion of the architecture of the earlier periods, to add to each structure, what is wanting today. If an error occurs, another may correct it.

50. Castle Towers, Platforms, Roofs.

As especially characteristic we find at the Oberburg at Rudesheim the form of the tower.⁴⁹ It may originally have certainly been somewhat lower. The diminution (batter) of the ex-

exterior is not found on later structures; it must therefore in this manner belong to the earlier time. The tower of the Niederburg must have been similar. As at all similar towers, no gate in the lower story led into it; rather was the doorway so high, that one could only reach it by means of a ladder or by a lowered rope. But the entrance, that we have drawn in Fig. 14, even if also old, is not the original one, that was found rather on the opposite side and still more elevated. Characteristic is the lack of windows, by which safety was increased, but comfortable residence was directly prevented. The feeling of safety was the only comfort, that such a structure could grant the inmates; for in fact with the means of that time, it was scarcely possible to storm such a castle without great sacrifices. We indeed have no evidence, that drawbridges were already in use there. We cannot however think that the drawbridge leading to the entrance was permanent; if not constructed in the manner of the later drawbridges, a portion must have been furnished in a different way with a handy construction, that made possible a temporary interruption. If this break were made and perhaps the entire bridge was removed, then it was not otherwise possible to reach the wall, than by filling a portion of the ditch, which must be done under the shots of the defenders standing on the walls. If in spite of their activity such a causeway were built, the attempt might be made to destroy it with crowbars, to undermine it, or ladders could be set against it to ascend it, or wooden towers higher than the wall could then be shoved against it, from which men could descend on the walls, and could hand to hand with the defenders. If the walls had towers, each of them formed a section and a separate defensive work, that must be stormed and taken, before the enemy was in possession of the wall. If he had reached the latter, there stood before him a second wall, that must likewise be taken, until he found himself before the tower, whose height made it difficult to ascend, whose thick walls were hard to destroy or to overthrow. If he had reached the interior of it, he held only one story in it. Each of them, at most accessible by a narrow stairway in the wall, as in our case, or as generally accessible by a hole in the floor and a ladder, must be separately taken, and thus it required no little time and bravery oppos-

opposed to even a small but decided garrison, to actually conquer such a castle. Generally men must be satisfied to besiege it so long, that the garrison was compelled by hunger or other compulsion to surrender. Men indeed employed machines for casting against the walls; but these had neither the unerring aim nor the force of our modern cannon. The garrison, that placed such on the platforms of the castle, could thereby far better reach the unprotected assailants and their temporary works, than the latter could do against the massive castle. Therefore such platforms always belonged to the defensive apparatus of every castle. Particularly all towers had on top their terraces, and if we conceive any castle in a good condition of defense, we must imagine such platforms surrounded by battlements on all parts, that could and must be defended, on which the defenders could move freely, and on which also stood the casting machines. But these platforms were hard to maintain watertight, and where the materials were not absolutely excellent, they were greatly exposed to injury by weather. Therefore everywhere that climate permitted, roofs were placed over them, which could be easily removed if necessity required.

Note 49. We intentionally avoid the expression "belfry", which has recently been employed for such towers without justification. (See Chap. 9).

The usual appearance of a castle therefore shows us everywhere in the North those pointed roofs, which still please us on well preserved castles, and which alone have ensured their permanent preservation, and can ensure it farther. Therefore also but exceptionally in certain of the following attempts at restoration of German castles, we have omitted the roofs, although these do not always entirely belong to the true appearance.

But such a mound like the Oberburg was originally also the Niederburg, and the fact that here none of them stand directly together, sufficiently shows how great the number of such little castles must have been originally, that with their small garrisons if combined, could resist but little. These mounds formed in a sense the last offshoots of feudalism. In them sat the separate vassal, who with few horses and troopers had to resist an army. The greater families, the counts, found

greater castles necessary, and where a formal court should be held, as in the castles of the duke, there were necessary other arrangements, than such a mount afforded. Certainly in our restoration, we have drawn only the monumental parts of the Oberburg. The model of the 17th century shows nearly the entire empty area as occupied by wooden structures; particularly the space between the two walls of the north and east sides was roofed. Since it had a width of 20 and 23 ft., then already in the 11th century many separate wooden structures have stood there, in which animals and men found shelter, for which as separate dwellings their room could not be afforded. Likewise in the Niederburg indeed scarcely the entire court was free, but wooden structures must have occupied a portion of it.

51. Palace at Egisheim.

A very remarkable monumental mound is the so-called palace at Egisheim in upper Alsace (Fig. 15).⁵⁰ A high octagonal ashlar wall with each side 42.7 ft. long stands today to a height of 26 to 30 ft.; the ditch is filled, that surrounded it; likewise some decades since the octagonal tower was removed, which stood exactly at the middle of the plan. The ashlar work with bosses on the enclosing wall in general indicates the 12th century; meanwhile one can neither state, which is the first example of ashlars with bosses, nor decide that this mode of building was limited to the century mentioned. But we ourselves assume, that we have here before us one of the earliest examples of ashlar construction with bosses, and that it falls in the 11th century, so that in the plan of this low castle we can still recognize only a reminiscence of an older design. Instead of this stone castle formerly stood a wall with palisades and wooden blockhouse in the middle, that the master, or perhaps more correctly expressed, the commander of the little castle occupied, while in the inner court might have been erected barracks for the garrison and their horses. When the rebuilding followed is thus not very important. As the tower appeared in place of the blockhouses, and instead of the earth wall the high masonry wall, attached to the latter wooden buildings may have stood inside it in a circle, so that only a narrow strip of court remained free about the tower.

Note 50. See Koehen, J. Die Burgen in Elsass-Lothringen. H. Heft 2. p. 6, Plate 3. Strassburg. 1886.

Note 51. See the same. Plate 3.

52. Ashlars with Bosses.

If we consider the mode of fighting of those days, it finally was an encounter of man against man. This also occurred in a siege, that must end in a storm, in regard to the combat. The latter could not be made impossible by the fortification; therefore even for the defenders the conditions were to be made as favorable as possible, as unfavorable for the assailants as they could be made. There was now a wall with a slope of about 45° , even if still overgrown by grass or broom, an obstruction to the assailants not to be underestimated, who had to climb it to find at the top their opponents behind a strong breastwork of palisades on firm ground, with which they must fight hand to hand. On the contrary if a wall of the same height had opposed them, it was only a matter of bringing sufficiently long ladders and of properly fixing them, so as to ascend the wall on them, and the combat sought could occur on its top. It was therefore necessary to do all, that could make more difficult the raising of the ladders. For this the ashlars with bosses served finely, for they prevented the ladders from being slid up on the wall, and men have desired so much the more to derive their origin on this ground, since they occur exclusively in military architecture. They also give to the appearance of the structures a certain force, that decidedly corresponds to the character of military architecture.

The origin however must have a purely technical ground. In the transition from earth to stone construction, it was necessary to employ skilled artisans, masons and stonecutters, instead of the simple serfs, who could move the earth, and their labor must be repaid. That was a more expensive matter, that must be reduced as much as possible. Especially ashlar work, which certainly resisted the pattering ram better and made undermining more difficult, than the rubble of split stones, required tolerably large blocks; then must it be regarded as an advantageous saving to cut only the edges of the stones, the middle parts being left as they came from the quarry, thereby omitting the not absolutely necessary work of the stone-

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stonecutter. If the consideration of storming ladders were determinative, then would men have not employed ashlar with bossed in places where a ladder could never be placed.

53. Castle Arques near Dieppe.

In the further programme of our examination we now meet with castles of all sizes. Originally the mode of construction for these larger ones was not different from that of the mounds. Viollet-le-Duc presents to us in the Castle of Arques near Dieppe, ⁵², that he attributes to the 11 th century, with which we willingly agree in reference to the entire plan. The separate structures, as reproduced, may in great part fall in the 12 th century. The plan in Fig. 16 ⁵³ is drawn at the same scale as the Rudesheim mounds (1 : 2000), like all our general plans of castles, so that thus the relative dimensions at once appear to the eye. But the mode of construction of the earth castles before described here entirely meets us, as applied to a great plan.

Note 52. See Viollet-le-Duc. Vol. 4. p. 69 et seq. -- Also Clark. Vol. 1. p. 186 et seq.

Note 53. From Viollet-le-Duc. Vol. 3. p. 70, 72, 75.

At the foot of a mountain slope S, from which it is however separated by an excavation, which seems to us too mighty to be able to regard it as artificial, as for other castles, there appears an oblong terrace sloping down from south to north, that is enclosed by a deep ditch and a high wall D E F G N outside it. The edge of the terrace itself was indeed later surrounded by a high wall, interrupted by a number of towers. Since the top of the hill does not consist of loose earth, but of strong rock, the ditch O is in great part cut in the rock. Inside the ditch a passage also cut in the rock extends around the entire castle. The section in Fig. 17 ⁵³ makes this clear. At the foot of the castle extends a small area from a brook Q at the foot of the castle rock up to the wall, enclosed by a wall G H I K L M N. Beyond the brook are wet meadows R. A road leads from southeast to northwest through this area; north of it intersects a series of roads, of which the road P P leading through the ditch is dominated as completely by the castle wall, as that passing through the places H L. The entrance to the castle is at B before which is an outwork C, ⁵⁴ from which a bridge led to the top of the wall at D, f

from which the road down the hill to the tower M led beyond to the road D. The principal tower A was developed into a formal building, that in its interior afforded a considerable space for living, since a man of the standing, such as the possessor of such a castle had, in spite of all moderation, had greater needs than the occupant of one of the mounds of Rudesheim. What is to be particularly considered at this castle is the fact, that it still had a second entrance F at the opposite side, that only led to the ravine on the south side of the castle. This may have been a way for flight or for a sortie; for the side from which naturally the attack proper was to be expected was always here the north side.

Note 54. The same first belongs to the 15 th century. Viollet-le-Duc is of opinion, that the wall was originally simply oval, that thus it did not already have a predecessor in the 11 th and 12 th centuries. From thence is also taken the perspective view (Fig. 18).

The terrace itself was divided into two parts by a transverse wall, so that if an entrance at B was forced by the enemy, they could not reach yet the tower A, the chief part of the castle. The platform, particularly the low part near B, now contained a series of structures built of wood, that were placed here and there, and in which men, animals and supplies could find shelter.

54. Donjon, Keep, Hall.

Some very interesting structures of this castle, especially the principal tower, will be mentioned later. Such a main tower (donjon) formed the most important part in the 11 th century in the Norman castles. Viollet-le-Duc attributes the towers of Champaigny and also of Falaise to the 11 th century, that according to his assumption were only surrounded by light earthworks, and first received stronger external fortifications in the 14 th and 15 th centuries. Thus he also expresses the conjecture, that the numerous castles, that the Normans under William the Conqueror (1066 - 1087) erected in England, were just strong masonry towers (keeps), that were enclosed by a light earthwork. But it is characteristic of all the important magnitudes of the keep, that are to be regarded as strong residences of such lords, that besides strength also desired some comfort, and before all sufficient room for them-

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themselves and their followers in their strong houses. Already then these castles in part bore the appellation of "hall". The tower must then include a hall within it as the chief room. In the German castles we find this hall developed in the palace, the tower therefore with few exceptions lacking all comfort. The most interesting and most extensive of these keeps in any case is the nucleus of the Tower at London, the White Tower. ⁵⁵ Meanwhile besides the rectangular Norman keep developed from the French donjon, there also remains the round tower, also in the course of time developed into mighty structures like the rectangular. (Shell keep). We shall have to return to both kinds later in the consideration of the strong house.

55 Note 55. See Clark. Vol. 2. p. 207 et seq.

We have similar castles in Germany, surrounded by wall and ditch on the sides of hills. The most interesting of these is indeed the Salzburg ⁵⁶ near Neustadt on the Frankish Saale, that already existed in the Carolingian period, and whose plan may belong to the 11th century, so far as it is still preserved. Certainly the greatest portion of what exists on the buildings also belongs to the 12th and 13th centuries; but the general plan, especially the moat and the enclosing wall on the south and west sides, doubtless belong to the 11th century. We give in Fig. 20 the plan and in Fig. 19 ⁵⁷ the section at the scale of 1 : 2000.

Note 56. See Krieg von Hochfelden (Anz. f. Kunde der deut. Vorz. 1837. p. 89 et seq) and his "Gesch. d. Milit." etc. -- Additions to the ground plan are according to the drawings of the author.

Note 57. From the same.

We also have here the elevated terrace and the ditch enclosed by a wall. As everywhere, the excavated material was also employed here to level the terrace and construct the earthen wall, yet wall and ditch were not of dimensions as at the castle of Arques; yet still they were large enough to form an obstruction to the approach to the wall. The plan offers much of interest. First we can well assume, that at first the wall and ditch were constructed around it. There it remains noteworthy, that the entire ridge of the hill sloping off southward is not included in the defense, but remains left outside it,

although an assailant might reach it without great difficulty, and thus could make a strong stand directly before the wall. Thus we have to conceive wooden outworks projecting here. On the west side ⁵⁸ where wall and ditch are well preserved, one sees that the latter is cut from the rock with not too great regularity, doubtless with the intention to make passage in the ditch as difficult as possible, so that the enemy, that had taken it, could not move freely therein and would find difficulties in his operations, while he was exposed to shots coming from the wall. Protected by wall and ditch, one might easily undertake to replace the inner second earthen wall, that originally enclosed the terrace, in parts by a masonry wall; on the north and south sides this inner earth wall has remained, and vestiges of it may be recognized today, since the masonry wall with the towers -, B, C and D are set so far back, as to form a formal enclosed space before them. ⁵⁹ This wall extending around with towers is executed in split stone, such as the site afforded. Only the tower A is built of ash-lars with bosses and certainly belongs to the 12 th century. Although now windows, which show the expressed style of the 12 th century, occur at places at which structures are directly attached to the enclosing wall, and although buildings manifestly belonging to the 13 th century and still later times exist in the castle, that are correctly executed in the same split stone masonry, yet we cannot believe, that already at the building of the wall itself these windows were planned, which under all circumstances lessened the resistance; we believe rather, that the wall already existed there previously, consequently must have originated in the 11 th century, and that first at the addition of the buildings in the 12 th century the windows were opened. The entrance was indeed found at A at all times, at the highest point, that certainly does not indicate much, since the fall toward N is not important. The castle is separated into three divisions; the foremost was separated from the second by a wall, that ran from tower E to chapel K ⁶⁰ past the first principal tower F, beside which was found the entrance to the second, and from thence doubtless to the tower H. A series of buildings with their own courts mostly originated in the 12 th century, and there was little regard paid to the comfort of individuals or to the s

strength of the whole. In the 12 th century the fortress belonged to the bishop of Würzburg, who may have placed there a number of vassals, who then erected their comfortable seats in the great castle, thus the buildings indicated near tower C and those marked Q, T, V. In the second court are found the buildings L, M, R, S. The structure marked L could be regarded as the chapel, if it were orientated. Popular tradition designates it as the mint, which it certainly was still less. In any case it is one of the most charming secular structures of the 13 th century, of which we have to speak later. The third court is found on the lowest ridge of the hill. A second principal tower defended the entrance lying next to it. In this third court was found the well P, at N again being a no-use of the 12 th century consisting of two parts. At O is a later house, that dates from the 16 th century, the sole still habitable monumental building.

Note 58. At the south side, where in our century vineyards have been planted, the earth wall has been removed and the ditch made wider, so that the vineyards extend directly to the masonry wall.

Note 59. On the meaning and origin of the word "zwingern" (enclosure), see Chapter 10.

Note 60. This is new, yet originally a similar one stood about on this place.

Of quite particular interest are the remains of the tower E; although it is torn down almost to the internal ground of the castle, it may yet be recognized, that in it was found the connection with the castle ditch. On the southern side the wall no longer follows the course it had before the north side from E; but the entire narrow side of the tower is exposed. At this narrow side there is now in the interior of the tower a pit about 10 ft. long and half as wide, that has a door at bottom, which leads out of the castle to the outer foot of the wall. A stairway or its like does not exist; rather ascent and descent in the interior of the tower through this pit must have been made by means of a windlass. On our section in Fig. 19 is visible the little door of the tower.

56. Castle Dankwarderode.

Larger than the Salzburg is the plan of Dankwarderode, the castle of the Saxon duke,⁶¹ that gave the city of Brunswick

its origin. Located on an island of the Oker, whose course it passes through swampy meadows, it was protected by swamps and water, and still bore a fortification of wood and earth, until well at the close of the 11 th century a rebuilding in stone was undertaken. Winter has determined with great care the course of the fortifications, as well as the location of the different towers, so that we can base our plan in Fig. 21⁶² on his studies.

Note 61. See Winter, L. Die Burg Dankwarderode zu Brounschweig. Results of the investigations in architectural history instituted at the order of the city magistrates. Brunswick. 1883.

Note 62. From the same, Plate 5, etc.

We willingly assume with Winter, that Dankwarderode under Henry I received a fortification, that was entirely constructed of wood and earth after the custom of the time. It was burned to the ground about 1090. But already between 1022 and 1037 the monastery church in this castle was erected as a stone structure, so that according to Winter's assumption, it was not destroyed by the fire in 1090, but remained until the rebuilding by Henry the Lion. On the manner in which after 1090 the rebuilding was executed, all possible starting points are lacking, and still we believe that Winter does injustice to his countrymen, when he asserts, that the condition of civilization in Saxony in the 11 th and 12 th centuries had not risen to the height, that a stone construction of the castle is conceivable before Henry the Lion. We merely recall Gaston! We rather believe, that the state of civilization of Saxony in the 11 th century was the highest conceivable for Germany, and that only perhaps the Rhine provinces could compete with Saxony, but not Swabia, Franconia and Bavaria. We therefore also do not doubt, that the castle (castrum) Winter mentions, dates before Henry the Lion and belongs to the close of the 11 th century, thus originating after the fire of 1090; indeed we go a step farther and assert, that the buildings of Henry the Lion robbed the east side of the castle of its defensibility, for whoever considers the plan must at once recognize that the palace was not defensible, that it also opened a gap in the system of defense. Whoever placed the palace defenseless in the manner in which it now stands, could entirely

spare himself the trouble to protect the remaining part of the island in the Oker by defensive works; no enemy could ever direct his assault elsewhere, than against the palace lacking all protection, the drawing ^{of which} in Winter's work should be examined. We regard the castle (castrum), under which designation it is mentioned in 1134 in a document of the emperor Lothaire, as a work of the close of the 11th century, and so we also readily understand, that emperor Conrad in 1151 did not think of a siege of the castle, but before Henry the Lion left the country without fighting.

However little positive we know of the castle, yet Winter's plan, as Fig. 21 shows, affords opportunity for many instructive discussions. First we place before ourselves the question, whether the Oker island had its shape at that time naturally. When we now see that the Oker entirely flows through swampy lowlands, yet at this place the western arm presses to the edge of the swampy land, we must indeed conclude, that this was not the original course, that rather a removal must have occurred there, and that thus the island was artificially enlarged. This may have already occurred at the first plan, and the somewhat elevated portion may indicate the original island. Wherefore it now comes to present the second question, is the enclosing wall with the towers not directly on the arm of the Oker? Certainly not. This area must have been included in the defense. Since no vestige of a wall is found, there was indeed an earth wall, similarly as before the northeast side of the Salzburg. We have introduced it as designated by B in the plan. It is an arrangement, such as men later termed an enclosure ("Zwinger"). Here as at the Salzburg, where the arrangement is not on the side of the slope, but is only found opposite the mill terrace, the earth wall is indeed a part of the older fortification, that men must indeed not destroy before the new masonry wall was completed. The latter must thus be built at such a distance behind the earth wall, that this should not merely remain untouched, but could also be defended without hesitation, while it was built behind this. But after the new wall stood, the earth wall must be retained, until it could likewise be replaced by a front wall; for just this one could not remain independent. Since the undermining and the ascent of the walls formed an essential part of the

siege works, then must in general the direct approach to the wall be obstructed everywhere, for which such an earth wall with a row of palisades was the best means.

To the notable peculiarities of the plan also belongs, that on the other hand the tower A, which contained the entrance to the castle, projected into the water. It is also larger than the other towers of the wall, perhaps older, and since we must indeed also establish these hypotheses, was already erected as a strengthening point of the wall, but was then retained for the later fortification. On the east side was formerly found a row of towers, of which a larger tower C as well as the three towers D and a tower E are proved by Winter's studies.

We have before stated, that the palace of Henry the Lion made a gap in the system of defense. But similarly disturbing for the defense must also have been the monastery, that he connected with the new cathedral. The cloister around the court L, especially in extent from west to east, cannot have been substantially smaller than that last existing, visible in Fig. 21. But now the cloisters were nothing more than passages leading to rooms extended around them, and the cloister had no purpose at all, unless at least as we have indicated, a wing building was found on the east side between it and the tower E, which at least made the defense more difficult, since it was in the possession of the prior. But doubtless there was such a wing^K also on the south side, inserted between the two wall towers and the cloister, which we have omitted to indicate in our plan. But only incidentally may it be noted, that the tower E had an entrance, that connected the monastery with the part of the city lying opposite, thus also making the defense of the castle more difficult. We certainly need not assume, that this was already arranged in the time of Henry the Lion.

Winter indicates a series of buildings not monumentally executed, that stood on different places of the castle. A principal tower, as such must have existed as the nucleus of the castle, as the last place of refuge and of defense, so long as the castle was defensible; Winter could not prove, ^{it} as he expressly states. In any case, it stood on the upper terrace, that indeed has its own wall, but at least bore a palisade f

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that it shows as the plan, now it no longer appears, that it
certainly must exclude for as soon information on the ground, a
view of the internal house as Götter, whose appointments cer-
tainly have not been the first similar cases. The examples
a comfortable and pleasant seat of a prince.

note 68. See Bitter, H. von, *Recherches sur les propriétés* 122
apocryphes it possesses much interest. (Fid. 22).⁶⁴

about the middle of the 11th century, designed by Louis the
Venerable, Archbishop of Trier. Its enclosing wall follows
exactly the form of the top of the rock, and rises from cor-

adjacent will occur by an artificial cut. All sides of the
will on whose terrace lies the Warrenton, can be considered as
a joint terrace and as such will just as well be climbed, or for
above A was an approach possible. Only good at the bottom
- could also be taken as an approach, if the bar-

viewed as a result of the natural location, that relatively few belugas were observed. And also, belugas were observed in less than a series of patterns, that we have seen in a number of the other species. Certainly of the 11 in general, that we have seen in a number of the other species. Certainly of the 11 in general, that we have seen in a number of the other species.

fence, perhaps at I, where the bronze lion stands, perhaps in a place now occupied by the cathedral, and in any case it must already have been displaced by the buildings of Henry the Lion.

It does not pertain to the least interesting considerations, that we can add to Winter's careful studies, that it was just Henry the Lion, after he had come to rest after hard combats, who did not newly fortify his castle Dankwarderode, but partially removed the fortifications, in order to change it into a comfortable and peaceful seat of a prince.

This may not have been the first similar case. The examination of the imperial house at Goslar, whose surroundings certainly must exclude for us such information on the ground, that it shows us the plan, how it no longer happens, that it is to be regarded as the palace of a strong castle.

57. The Wartburg.

Among all German castles, scarcely any other has found greater interest among all classes of the people than the Wartburg.⁶³ Likewise for the study of the development of castle architecture it presents much interest. (Fig. 22).⁶⁴

Note 63. See Ritzen, H. von. Führer auf der Wartburg. 1st edition. Leipzig. 1859.

Note 64. The same. p. 73.

About the middle of the 11th century, planned by Louis the Vaulter, landgrave of Thuringia, its enclosing wall follows exactly the form of the top of the rock, that falls from north to south. At the northern point this is separated from the adjacent hill crest by an artificial cut. All sides of the hill on whose terrace lies the Wartburg, can be considered as not to be climbed, so that only just at the northern point a above A was an approach possible. Only about at the southern point could a bold enemy here also make an attack, if the garrison was not sufficiently watchful. The enclosing walls were therefore so secured by the natural location, that relatively few defenders were necessary, and also therefore it does not show that rich series of battlements, that we have seen on the preceding. Certainly of the buildings of the 11th century little now exists. What interests us belongs to the 12th century and a still later time. Besides the course of the walls only the eastern tower must still belong to the close of

the 11th century. An entrance building B, really a tower, stood on the site of the present one; even so may the first court have been occupied by wooden structures, as today the case (marked L on our plan); just so likewise was a division at the place, where today stands the entrance into the inner court of the castle, then indeed likewise defended by a tower C. Where the principal tower stood must be hard to decide. T The restorer believed that he saw it in a tower, whose remains could be shown near D, and which he again erected. Also the inner court in any case was occupied by buildings K. Under landgrave Louis III, in the middle of the 12th century was the palace built at the east side, and toward the close of the same century under Hermann I, it was raised by another story. Also our palace, like those buildings generally -- which we therefore have to treat in the Chapter on "Houses" -- was not arranged for defense, which was indeed entirely superfluous, since the location made a direct attack impossible. This palace will be mentioned further later. The tower T now stands detached in the court; ⁶⁵ formerly a wall seemed to adjoin it (?). Whether the wall in this southern portion was a double one already in early times is not to be determined with certainty.

Note 65. It has a certain degree of probability in itself, that this tower was originally the principal tower of the castle, which certainly did not lie in the middle, as for the regular mounds, but was rather transferred more to the end, in order to stand more properly, as we shall see in other castles, if from the southern point an attack should be attempted.

58. Castle Steinsburg.

If in the plain the mound could be arranged with entire regularity, there must be considered its form, where it was to be erected on the top of a hill; for it would not do to leave some of its rooms outside it, that the enemy could use in order to establish himself strongly before the wall, unless men desired to yield all advantages, that resulted from the elevated location. Thus it is a somewhat irregular oval, that castle Steinsburg shows us, ⁶⁶ that crowns the top of a hill near Einsheim in the Kraichgau in the grand duchy of Baden. It forms a part of that network of castles, which had to defend the plain of the right bank of the Rhine. It stands high above

the low hills in the vicinity on the apex of a hill entirely free on all sides. (Figs. 23, 24).⁶⁷ the history of this castle is quite dark; it therefore passes for Roman, and Krieger von Hochfelden regards it as such. Today can no longer exist a doubt, that the castle is a rebuilt one of the 12th century, on the basis of a mound of wood and earth, such as indeed the 10th century erected.

Note 66. Very beautiful drawings of this castle on 5 folio sheets, that we have also used, are contained in the work: -- *Denkm. d. Kunst u. Gesch. of the homeland*, published by Soc'y of Antia. of Grand Duchy of Baden. By its director, A. von B. Boyer. Heft 1. Castle Steinsburg in the Kraichgau called the Weiler (hamlet). -- After Krieger von Hochfelden. *Gesch. d. Mtl.* Stuttgart. 1859. p. 82 et seq.

Note 67. From Note 66 of the work first named.

The tower was erected on an octagonal plan, and stands about at the middle of the enclosing wall at H, while at G is the well, at F a gate, at I a later house, adjoining which are still other buildings at K, which are certainly later, yet still show now also originally buildings also adjoined to the enclosing wall of the mound. The tower, to which we shall refer later, although small in its internal rooms and only poorly lighted by wall openings, is yet arranged habitably, at least in one of the stories being arranged with a fireplace. In the lowest story, into which one can only pass through an opening in the vault, it has in the floor a shaft, that has not yet been examined, but in any case was a secret exit serving for escape, from which passages led to the foot of the hill and beyond, that probably extended far enough to pass through them behind the besiegers into the open country. Such passages were of great importance for the system of defense of castles, since they were known to few, and not merely served for flight at the worst time, but also made it possible to connect with the external world behind the backs of the besiegers, while they caused no danger of any kind to the castle; for without help from inside no one could ascend through the shaft, and even if an enemy had reached the interior of the tower, it was yet impossible for him to cause any injury. But also generally not merely a single passage led from the shaft, but there were several of these, in which one must go

astray, who did not correctly know the way.

Contrary to the usual custom, our tower has two entrances. The one on the southeast side was the regular one, originally the sole access and placed at a corresponding height. Gorbels under and over this show that a wooden structure projected before it. The second entrance at the same height is on the southwest side and led to the upper part of the building I, and was thus indeed originated when this was erected, when the master of the castle might no longer dwell in the tower, and built himself a house. A ditch evidently did not exist, since the plan had its present form, but on the other hand was a double, and on the northwest side a triple enclosure. (Zwinger). At A one passed to the foot of the castle, then through the third enclosure to the gate B, which was defended by the tower V. The second enclosure C had its entrance directly at B, the third enclosure D, opposite the point B. Various buttresses on the walls of the enclosure might have been added as desired for stability, and the three semicircular towers X, Y and Z were intended for fortifications; particularly X was important for the defense of the gate A. Krieg von Hochfelden, who held the castle to be Roman, believes that the enclosures were of later origin (12 th to 13 th centuries). Since we assume, that also the castle itself first falls in the 12 th century, we have no opportunity to attribute the arrangement of the enclosures to a substantially different time than the castle. If Krieg assumes, that as we have also indicated this in our section, the rock formerly fell off more steeply from the line of the enclosing outer walls, then we shall not doubt this. But if the terrace of the enclosures was piled up later, we then ask where the material came from? For so long as the world stands, the ground principle was determinative everywhere, that the fill and hollow must equal each other; we see thus in the piled terrace only the deposit of the material, that resulted from the leveling of the terrace by removal of the apex. But if the walls themselves, as they stand, must have been of a rather later period, perhaps of the 14 th century, then was a palisade fence previously on this place, perhaps an earth wall and ditch. That the enclosure became double for this might even occur, that since the palisade enclosure on the outer line must be repla-

under the castle.

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for time.

to this place those of the Frankish time. still farther back; for there are found remains of prehistoric remains of human habitation in the neighbourhood of the ruins. The ruins of the castle are situated on a hill, and are of the Frankish time. The ruins of the castle are situated on a hill, and are of the Frankish time.

about 284 ft. west of the later enclosing wall, this nearly
even with the wall and the wall must have
extended to the slope of the hill. Highway no. 14 is a second
one also (Fig. 25).⁶⁰ where it goes from O to A, while the
northern course falls somewhat outside our plan. These courses
are not straight lines, and the wall follows the contour
of the hill. Another believes that they may be regarded as Roman. (7). The
wall is still standing portion, while the rest of course is only
traced. It follows the contour of the hill and is not straight.

replaced, the inner wall of the enclosure must have been built inside the row of palisades, before they could be removed, and then only when they were taken away and wall and ditch were leveled, the outer wall could be erected. The more enclosures, the greater the obstruction to the siege, and the stronger the castle.

59. Frankenburg in Upper Alsace.

A considerable number of smaller castles, well and systematically distributed, is found on the hills of Alsace and the Bavarian Palatinate, in the Vosges and on the Hardt. Most have already laid long in ruins, and their plans go tolerably far back; at most however very few remains from the earlier time are preserved, and generally they belong to the close of the 12th or only to the 13th century in the form in which they remain to us as ruins. They partly belong to a still later time.

One of these castles, that allows its very interesting history to be recognized in the existing remains, is the Frankenburg in Upper Alsace, located on a projecting hill of the Alten mountain at the place where the Leber valley unites with that of the Weiler. It is regarded as the oldest castle in the country, and must have been built by Chlodwig. We owe friendly communications concerning it to provincial architect retired Winkler in Colmar, the architect of the historical monuments of Alsace. According to his communications it goes still farther back; for there are found remains of prehistoric walls beside those of the Frankish time.

According to his opinion, the oldest indeed lie quite below, about 984 ft. west of the later enclosing wall, thus nearly in the bottom of the valley, from which the wall must have extended up the slope of the hill. Halfway up lay a second enclosing wall, whose southern course is still indicated on our plan (Fig. 25),⁶⁸ where it goes from O to A, while the northern course falls somewhat outside our plan. These southern and northern lines unite at the west, following the ground. Winkler believes that they must be regarded as Roman. (?). The Frankish wall is made noticeable on our plan by hatching the still standing portion, while the rest of course is only dotted. It likewise adjoined the rock A and at C passed to the north side, where its trace is lost, still farther over

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a ravine, probably entirely around the top again to A. It indeed stood on the same place, where now the outermost wall of the southeast side stands. It is very easily possible, even probable, that this entire line of the Frankish wall was preserved during the middle ages, and that the existing wall, which is attributed to the 13th century, is only an occasional substitute for the Frankish wall injured at this place by some events. Through the rock A leads a passage, also the old entrance to the castle. We give this portion again in Fig. 27 (at the scale of 1 : 500), since by the smallness of the scale of the plan, it is not sufficiently clear. While the Frankish wall adjoins the lower part of the rock, there rises that of the 13th century, before it indeed being also the Frankish, till it passes around the peak, on the upper height of this projecting rock, and then continues in a break, becoming narrower, as a second wall to the point D, where a dividing wall transversely intersects all parts of the spiral ascent. Nothing more is to be seen of the way, which formerly led into the rock entrance, and that indeed extended around the entire castle, so that those ascending always presented their unprotected right sides to the defenders standing on the wall; one ascends directly from the valley and first reaches B, where the remains of a forecourt are found, through which the way passed on its original course (this is dotted on our plan), went through the obstructing wall at D, at E by a bridge over an artificially excavated ravine reached a small triangular forecourt E F, and at F goes into the eastern enclosure. Likewise for clearness this portion is again given (at the scale of 1 : 500). At the east side is found at G the entrance into the proper enclosure of the castle. The southern point of the castle enclosure is strengthened by a projecting structure L existing in ruins, in which Winkler sees a tower in spite of the small thickness of the walls. In the interior of the castle court are remains of different buildings, whose window openings perforate the enclosing walls, which could occur without danger on account of the elevated location. The proper main tower is round and stands at the northern end of the terrace. It belongs to the 12th century, while the main wall itself in its lower parts must belong to the 9th to 10th centuries, the higher construction to the 12th. Thus far the c

THE HISTORY OF THE CASTLE OF BUNDELSCH

THE HISTORY OF THE CASTLE OF BUNDELSCH

the castle of Bundelsch. We are also able to give this plan on the basis of the careful drawings of Kunkler.

The plan of the castle of Bundelsch is essentially composed of the form of the rock, even if it is not essentially the same as the plan. It is certain now that the determination from the plan of the castle is not essentially different from the plan of the castle of Bundelsch.

It is also certain that the castle of Bundelsch is not essentially different from the plan of the castle of Bundelsch.

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communications of Winkler, who carried on the investigation with great care.

Note 88. We are also able to give this plan on the basis of the careful drawings of Winkler.

The consideration of the rock terrace shows, that the spiral rise of the walls was substantially compelled by the form of the rock, even if also art had substantially aided the natural plan. It is certain now that the determination from the character of the masonry is not absolutely trustworthy, especially for a castle constantly in use, therefore always kept in condition and improved, where men may have also employed in part the earlier technics in the later time, since this was to be added to that existing. But doubtless we have to do with a very ancient design, with a hilltop, at latest in the Frankish period enclosed by a wall, which served as a refuge, and down the slope of the hill adjoined the two great walled enclosures, whose masonry Winkler designates as prehistoric and Roman, but which perhaps in spite of the differing technics must also be regarded as Frankish. These two outworks were allowed to fall in the middle ages, when a castle was erected for a vassal, which had to receive no large garrison. While retaining the Frankish wall, that originally extended around the top from A to A, men erected the existing one, may remain established, whether just in the 9th to the 10th or only in the 11th century; that time seems to us not accurately given. For a feudal castle it was then completed in the 12th century.

The chief difference from the ancient mound depends not on the irregular plan of the main wall, that was determined by the form of the terrace, but on the projection of the tower L adjoining the wall in an earlier unusual way. Perhaps the form of the rock gave opportunity, that already in the Frankish time was here a second nucleus of the castle, thus stood a blockhouse or tower; for the round tower M is not removed too far from the centre of the Frankish plan; or since it is later, its predecessor may, determined by the formation, have had just this place; the proper chief tower was there from the beginning. Naener praises the careful work of the round tower, that has three offsets inside. The entrance is found above the second story. The castle is mentioned in documents in the

...also found, that with the preservation of
...of the structure was in the 11th century, in
...in the 12th century the great tower is a detached
...work detached from the centre of the castle, it must serve
...the defense as an important support in an attack on the main
...wall: for if its fall was not the result of a sudden surprise,
...one was that of a breach a reasonably regular stone,
...and could not exceptionally the fortress be reached by a
...the tower lower. But this must have been the case, if
...the tower stood elsewhere than at the middle. It is as we assume,
...the existing tower already stood at 4, then had to make it
...partial almost for the defence of the main wall, this may be
...it was feared to have for the other end of the structure
...concerns a further second corner, and the tower B was erected,
...whose walls have a thickness relatively small for the 11th
...century, because from the position on the rock, it
...could neither be undermined nor overthrown.

10. Castle Enclosure.

...the 11th century, it was a small, detached structure
...only in the most recent time has the little been brought to
...On a steep declivity and in a narrow space, the tower
...to the south, whose southern corner A is set off by a ditch
...entirely cut in the rock. This separate portion is surro-
...by a rectangular enclosure with rounded corners, 6.5 x 1.5
...to the south in the wall, since the thickness of the
...stone enclosing walls access to the wall very difficult. The
...northern point C of the wall is thicker than the other and
...is, being 2.5 ft., since it alone was exposed to various at-
...acks. In the interior also the remains of a second enclosure
...wall A is preserved, which are regarded as the remains of
...an other enclosure. It consists of ruins in courses, while
...the outer walls are of good masonry and were faced with stone.
...fully out square with corner. Of which is only the tower B,
...that stands against the north wall, and has a pentagonal plan,
...1.5, of a rectangular before which is placed a right-angled
...traverse with round sides, a form which is elsewhere found in
...the 12th century. No little material has been found in the

year 1105. But we also found, that with the progressive development of castle architecture yet in the 11 th century, in any case in the 12 th century the great tower is a detached work displaced from the centre of the castle; it must serve the defense as an important support in an attack on the main wall; for if its fall was not the result of a sudden surprise, but was that of perhaps a repeatedly repelled regular storm, then could but exceptionally the fortress be retained by holding the tower longer. But this might just as well occur, if the tower stood elsewhere than at the middle. If as we assume, the Frankish tower already stood at M, then just to make it useful already for the defense of the main wall, this may then have been placed at its foot in the 11 th century. But then it was desired to have for the other end of the elongated centre a similar strong point, and the tower L was erected, whose walls have a thickness strikingly small for the 11 th century, perhaps because from its position on the rock, it could neither be undermined nor overthrown.

60. Castle Schlosseck.

With the oldest castles of that group must indeed be counted the ruins of Schlosseck (Fig. 28), ⁶⁹ of which especially only in the most recent time has the little been brought to light by excavations, that has generally remained.

On a steep projecting hill lies a terrace sloping from north to south, whose southern point A B is set off by a ditch artificially cut in the rock. This separate portion is surrounded by a rectangular enclosure with rounded corners, C D H I. Towers do not exist in the wall, since the steepness of the slope otherwise made access to the wall very difficult. The northern point C P of the wall is thicker than the other sides, being 9.3 ft., since it alone was exposed to serious attacks. In the interior also the remains of a second enclosing wall A B are preserved, which are regarded as the remains of an older enclosure. It consists of rubble in courses, while the outer walls are of good masonry and were faced with carefully cut ashlars with bosses. Of such is built the tower F, that stands behind the north wall, and has a pentagonal plan, i.e., of a rectangle before which is placed a right-angled triangle with equal sides, a form which we elsewhere first in the 13 th century. So little material has been found in the

ruins, that were excavated and cleared in the last years, that the hypothesis has been proposed, that the structure was not generally completed. Certainly this is now scarcely to be assumed; where may the material have been taken? It may only be, that the last rebuilding in the 12 th century was not entirely finished. A pretty Romanesque portal was found, and was again erected at G as an entrance to the ruins. But whether it originally stood there may we strongly doubt; that the old entrance was found at this place however appears quite probable.

Note 69. From Koehler, J. Die Burgen der rheinischen Pfalz. Pl. 7. Strosburg. 1887.

Of the buildings that stood on the interior of the terrace, only very few remains are visible.

61. Triple Castle above Egisheim.

Of the peculiar manner, in which men understood how to adapt the plans of castles to the conditions of the ground, is characteristic the plan of the castle, that rises on the heights above Egisheim on a high ridge of rock, that affords the most splendid distant view of the Rhine valley. The ridge of the hill, on which the castle stands, has a depression, that entirely separates the southern portion. A second depression coming from the east reaches about the middle of the terrace, so that the centre must naturally be divided into three independent parts, each of which is a castle by itself; they likewise also have three names, the southern being called Weckmund, the middle Wanlenburg, and the northern Tagesburg. In popular speech the entire plan is designated as "the three Exen". Since the top of the hill is tolerably level, all three lie at the same height; each of them is a "mound" by itself. We present here in Fig. 29 ⁷⁰ the entire arrangement.

Note 70. From a drawing most kindly placed at my disposal by provincial architect retired C. Winkler in Colmar.

The access is from the western side; there must have originally existed only the single entrance at F; but possibly there was at A on the Weckmund one direct to the southern point, where is also now an entrance. The Weckmund I has at the point a building D', from which two walls extend to the rear broad side, enclosing an area, its lower part still remaining at B, from which the way at C leads through the inner wall i

into the court, just opposite the tower D. At E is found the well. Aside from the building D', whose ruins are rather insufficient for a decision, we have in reality only the irregularly arranged and approximately triangular mound, where instead of the proper ditch are the enclosures on two sides. The square tower is faced by ashlar with bosses and indicates the 12 th century, while for the remains of walls an exact determination of date cannot be possible.

The Weckmund was connected with the Wahlenburg by a bridge thrown over the depression. The Wahlenburg again consists of a court of irregular and approximately square plan. A round tower M defends the connection with the Weckmund. This enclosure was adjoined on the west side by a broad forecourt or yard with the entrance F, from which one passed at G into an inner forecourt, which by a doorway H led into the castle court of the Wahlenburg, and by a similar one at O into that of the Tagesburg. Grouped with tolerable regularity, there stand in the court of the Wahlenburg the tower I, to which Winkler may assign a greater age than to that of the Weckmund, a house K belonging to the 13 th century, and the ruins of another L, that was connected with the latter at the place where the castle wall could not be ascended from the outside. Between the three buildings is found the wall. Only the lower parts of the tower are faced by ashlar with bosses; on the upper parts such exist only at the angles.

Without there being properly visible a correct ground for this, the Tagesburg is regarded as the latest of these, although it is indeed otherwise conceivable, that the entire plan was a common one, even if perhaps constructed as now in a more primitive mode of construction, that was only gradually changed into a later state, a condition that we must elsewhere regard as normal on account of the limited means of the possessor of the castle. Then since the extinction of the counts of Egisheim occurring in 1116, the entire arrangement came into the possession of the Dagsburgers, and this may have afforded opportunity to assume, that then the Tagesburg was first built. The tower north of this, belonging to the 12 th century, has only a few courses of ashlar with bosses, that otherwise were merely employed at the angles, while the rest of the wall consists of small and well coursed stones. The build-

building O is a beautifully treated Romanesque residence structure of the 12 th century. Without lying entirely free from assault, it still appears to not be capable of defense; also in the ground story is a simple and unprotected exit door at the north into the open air; thus there must have been at least provisional defensive works before it. The building appears to have had formerly an extension at P. The enclosure R is a continuation of that of the Wahlenburg, only separated from it by a wall.

62. Castle Landeck.

Likewise on the point of the ridge of a hill, that is separated from its main surface by a mighty cut in the rock, stands the fortress of Landeck near Klingenberg. Its origin is placed back in very early times; on the building period of the still existing remains are wanting definite starting points. Naehrer will place it in the 13 th century, while we believe that the 12 th must be assumed. Our plan in Fig. 30 is drawn after Naehrer. 71, 72.

Note 71. From Naehrer. p. 16, Plate 3.

Note 72. Later, when the block for our illustration was already finished, Col. von Gehausen in a friendly way communicated to us more accurate drawings, which placed us in condition to correct some errors of Naehrer, had they been earlier at our disposal. The restoration of the castle in Fig. 31 could still be changed, consequently it does not everywhere agree with the plan.

By Figs. 30, 31 is to be seen, that the inner wall forms an irregular oval, arranged without a tower. The wall is covered by beautiful ashlars with bosses. The principal tower D does not stand at the middle of the enclosure, as in the ancient mounds, but is placed close to the wall. A second external wall with towers surrounds an enclosure, which at the special side of attack is so wide, that yet a third or middle wall finds room before the principal wall. In the external enclosing wall stands the gate tower B, to which led a bridge, both of its piers still remaining. Behind the middle wall is formed a small forecourt at its outer end, through which the way leads from the entrance tower. Through an arched gateway in the main wall one passes into a forecourt cut off in the angle of the main wall by two other walls, and from this, so as

to find himself opposite the principal tower and within the proper enclosure of the castle. Remains of dwellings are found at E and F of our plan; yet they are not sufficient to establish their original form; therefore in Figs. 30 and 31 we have only indicated the plan by dotted lines. The external enclosure of the wall may have been executed first in a later time. The ashlars with bosses on the rectangular tower, as well as the gate tower, show that already the original design was intended for this external wall, besides the internal wall and the principal tower.

63. Castle Wineck.

Also at castle Wineck (Fig. 32), ⁷³ not far from Katzenthal, the tower is entirely backed against the enclosing wall, indeed at that side from which the attack must come.

Note 73. The castle belongs today to the Society for Preservation of the Historical Monuments of Alsace. Our plan is based on the drawings of Winkler, who has also attempted a restoration of the castle, that we have followed in everything essential in Fig. 33. For the first time was the castle mentioned in a document of 1251.

It lies on a projecting hill, whose north and east sides are detached from the ridge of the hill by a deep cut in the rock, over which leads the way to the castle, at A passing over a bridge, so that indeed at B is to be assumed a lower gateway, remains of which no longer exist, while a greater tower seems to have stood at C, through which one passed into both the court and the enclosure G, found on the north side. The enclosing wall has different thicknesses, on the east side only about 3.3 ft., while the north side has about twice as much, so that a considerably wider defensive gallery projects from the tower D. At E stood a small structure, and at F a larger one, indeed a palace. The entrance to the tower lies quite high; yet it may be recognized, that a wooden structure was built before it. Where in a castle the palace is directly attached to the tower, which we have also indicated in our attempt at restoration (Fig. 33), the connection from its roof to the tower was arranged. It may still be seen on the tower itself, that a bay window projection was found on the open side. We think that this existed as a protection of a connection between palace and tower, and therefore have re-

...we have seen too far in our investigation, in cases we
 considered this place as entirely a stone structure. On the
 south end West Wall which has yet found the vestiges of an
 external enclosing wall extending from the lower gateway, no-
 ion surrounded a great forecourt. In fact of this we have no
 and a wooden enclosure, as seen was found like attached.
 the wall is given in the plan.

64. Castle enclosure.

It is difficult to determine the extent of the enclosure,
 our readers will think, that we considered only a local ac-
 tual with the enclosure, but the plan shows the
 example elsewhere, although similar cases are also present in
 cases.

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We give in fig. 44 the plan of the castle, which shows
 a castle tower above the little city of Khazendad in the west-
 gate. It is an oval enclosure wall attached according to the
 terrace, which water the two round towers 9 and 10 stand at
 a relatively small distance. This part of the plan has been dis-
 tinguished from the rest of the plan, and the plan
 of the castle is shown in a separate plan, and the plan
 the castle of the rock itself previously furnished for reference.
 Note 74. From Koller, G. Denkschrift der deutschen Akademie.

Continued of E. Ghazvin. Vol. 8. p. 5, 618. 25 - 33. Bombay-
 1851.

The castle and also have several other differences, even
 if the outlines are somewhat later than the first.
 little city located at the north end of the wall as O; behind this
 gate A, a second B, then further the wall as C; behind this
 stands a building D, a channel of the 14 in general, through
 to close than the canal itself, although it is applied after
 round arches. It is not an original structure, but a later
 addition, that we see in this channel. Behind it stands an ob-
 long wall of the castle, like the palace of the sultan,
 gate at Khazendad, but is placed directly behind it which is
 as passage extends across the canal, without this di-

restored this connection as it appears in the illustration. Perhaps we have gone too far in our restoration, in that we conceived this Palace as entirely a stone structure. On the South and West sides Winkler has yet found the vestiges of an external enclosing wall extending from the lower gateway, which surrounded a great forecourt. Instead of this we have drawn a wooden enclosure, as such was indeed first arranged. The wall is given in the plan.

64. Castle Münzenberg.

If we selected all examples in Alsace and the Palatinate, our readers might think, that we represented only a local school with its peculiarities. Therefore we also take once our example elsewhere, although similar ones are also presented there.

We give in Fig. 34 ⁷⁴ the plan of the castle, which crowns a basalt rock above the little city of Münzenberg in the Wetterau. It is an oval enclosing wall arranged according to the terrace, within which the two round towers G and H stand at a tolerably equal height. This part of the plan may have originated toward the middle of the 12 th century, and may have contained on the terrace a series of not monumental dwellings. The basalt of the rock itself preferably furnished the material.

Note 74. From Moller, G. Denkmäler der deutschen Baukunst. Continued by E. Gleditsch. Vol. 3. p. 5, Pls. 25 - 33. Darmstadt. 1851.

The access can also then have scarcely been different, even if the buildings are somewhat later that cover it. From the little city located at the North the way leads to the first gate A, a second B, then through the wall at C; behind this stands a building D, a chapel of the 14 th century, through whose substructure leads the way, although that can scarcely be older than the chapel itself, although it is vaulted with round arches. It is not an original arrangement, but a later addition, that we see in this chapel. Beside it stands an ornamentally built palace E, to which we shall have to refer repeatedly, but which does not at the same time form the enclosing wall of the castle, like the palace of the Wartburg, that at Nuremberg, but is placed directly behind it which remains intact with its defensive gallery, so that the defensive passage extends around before the palace, without this pl-

place thereby becoming defenceless. This plan shows in the manner now indeed also before and afterwards in other castles the numerous not monumental structures may have adjoined the castle wall, which stood within the fortification, and many of which may have been higher than the wall, that did not always need to have a considerable height, and could here also be satisfactory with a height of 16 to 20 ft. Thus the living rooms of the master of the castle might afford the pleasure of fresh air and a fine view, without changing anything in the defensibility by the erection of the palace. For if the height of the wall and the width of the defensive gallery sufficed previously, these would not be the weaker, if a massive wall were behind them. But if the wall were taken at this place, it is found easier to descend into the court, than if now the enemy had to climb over the parapet wall of the arched windows of the palace about 13 ft. higher. As in all cases, so we also assume in this, that the later walls, as outer lines of defense, surrounded both toward the city as well as outside the castle at different heights, that they are only reconstructions of older works, that in their places originally at least existed palisades, that the often noteworthy addition of certain parts to each other preferably caused, that before or behind the later wall the old line of palisades or the earthen wall or a wall became defective, that stood on the true line, and must have been retained so long, until the new wall stood complete. The round towers and bastions of the walls are certainly later strengthenings of certain points; particularly the bastion beside the gate A, as well as the round one at the western end, first belongs to the time, when at the close of the middle ages men desired to defend castles by cannon.

If we then consider the other buildings, whose remains exist on the terrace, then is there one that requires but little attention, but so much the more I, a second building like a palace about 100 years later than the first. It is turned toward the city, from which it may well be assumed, that the castle sufficiently covered it; for this later palace is not placed behind the enclosing wall like the earlier one, but is set on that, and it is also opened by windows in its lower part, so that in this place the capacity for defense was increased, &

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without one could just say, that the hill could not be ascended here. The well K should not remain without mention; although it is filled today, the sinking of it through the rock must certainly have made sufficient difficulties.

What interests us most in the entire arrangement, and has particularly caused us to devote closer attention to the castle is first of all the fact, that it is no longer like the ancient mound with one, but two approximately equal principal towers, in any case of equal importance. Already in the plans considered earlier have we seen, that the tower did not stand at the middle, but near the enclosing wall. A tower that rose high above the latter bore on its platform machines for casting, and at the same time could receive a number of slingers and archers, did not commence to show its importance first, when the inner wall was taken. It contributed to the defense from the beginning; the activity of its casting machines should already prevent, that the enemy could undisturbed and in general take a strong position in the vicinity. If the mound were small, located on the plain and regularly arranged, like the Ridesheim Oberburg or the palace at Egisheim, then was the central part of the plan quite intelligibly the place, where this tower must stand; but when the castle was irregular and elongated, there was no longer a most important middle point; the tower must be placed there, where probably the first and strongest attack was to be expected, so that it would protect this. But an elongated castle presented several such places; particularly where the castle stands on a rocky peak almost uniformly inclined on all sides, one need not assume, that the enemy would seek just the well guarded route of access in order to attack the castle. One then could neither utilize a tower at the middle point, that would be too far from each end, nor be satisfied with a single one, that could protect but one half, and so men placed one of these at each end of the castle.

65. Castles of the 12th Century.

The 12th century presents a notable phenomenon: we know that then in court circles men busied themselves not a little with theory; we also know, that men zealously studied Vitruvius and Végèze, and yet were men so practical, as to adhere in each separate case exclusively to what resulted from the ext-

external conditions, as if to what no theory whatever gave, in whose hands man might fall into a mechanical way. Yes, where we see, that where anything is done in a way, since it was so established, then it was not theory that led to this, but a tradition developed from practice, whose connection with the basal theory we only recognize today with difficulty, and still men were then entirely convinced, that they stood on the ground of this theory.

But if we return again to the classical land of castle architecture on the upper Rhine, we find examples also abundant there, where tradition has already abandoned and forgotten the way of the ancient mound.

There we also have a series of examples to consider, at which a great rock, that rises more or less vertically, strong by and in itself, since it was impossible to climb it, afforded the foundation for a restricted small castle in the country, that according as separate peaks of the rock rose more or less high, was subdivided into entirely accidental divisions.

66. Castle Fleckenheim.

One of the most remarkable castles of this kind is that of Fleckenheim ⁷⁵ in Alsace, located on the border of the Palatinate (Fig. 35). ⁷⁶ On the southern side of a hill top sloping from west to east, that descends in a flat curve to the north, stands a long and narrow rocky ridge, on the west side of which also rises a smaller and approximately square rock. Nature made this rock impossible to climb. Art has further aided and has made it nearly regular.

Note 75. Koehler, J. Die Burgen in Elsass-Lothringen. Heft 1. p. 13, Pl. 1. Strassburg. 1886.

Note 76. From a drawing of retired provincial architect Winkler in Colmar placed at my disposal, we were in position to correct Koehler's hasty sketches.

The length amounts to about 197 ft., the width is only 20 ft., and the height is 66 ft. This rock is transformed into a castle by considerable works in the interior. At what time this occurred is not to be shown. Naturally but little space was found in the interior; thus the flat terrace of the hill north of it must be included, and to the rock only fell the part, that the tower of the castle played elsewhere. In later times walls and towers were extended around the hill terrace;

originally have been a row of palisades, perhaps an earth wall in their place. The access was naturally on the north side. An artificial ditch A, over which led a bridge B, indeed with an outwork, interrupted the way, that went to the east but it turned to the west at C, at E again to the east, where it ascended to a little platform F at the foot of the rock. Beside the chapel H one came to some steps, that led to the entrance G cut in the rock, adjoining which were the two long stairway flights, which made accessible the various chambers in the rock. At S is a well cut in the rock and at V a second one, beside the latter being a winding stairway ascending to the platform.; likewise in the isolated western rock Q is a similar one. Little is known of the history of this castle always reputed as not to be taken; the family named from the castle

⁷⁷ occurs in the 12 th century. Any art forms, that would make it possible to fix definite starting points for the earlier building period are wanting; the later buildings will busy us later.

Note 77. Rudolf of Hapsburg must have besieged it in 1276; in 1274 it was taken by the French and destroyed.

67. Castle Trifels.

Much elongated and running from south to north, there rises on the ridge of the hill expanding at the north into a broader terrace, a crest of rock, which bears the Trifels (Figs. 36, 37), a castle well known for the splendor of its equipment. Its history goes back to Henry IV, who as well as Henry V repeatedly sojourned there; certainly of buildings there nothing remains, that dates before the 12 th century. Again at the Trifels the form of the rock crest exclusively determined the plan.

The old entrance, after it lay below at the foot of the hill on the east side, in any case originally lay higher above on the west side, then following the course along on the north side until at the northwest at A, where we have to assume that a tower stood, through which it passed steeply upwards to a second gate tower B on a first terrace E, that by an end structure beside B was divided into two parts. A slope of rock and a retaining wall supported this terrace on the north side. A tower D stands outside the plan, in its upper part being connected by an arch with the terrace. A half tower at

H, which exists in ruins, shows that still outworks existed, even if it may also itself belong only to a later time. In any case there ran a row of palisades and later a wall, enclosing the way of access and attached to the tower D, around the terrace of the castle. In the western part of this terrace I was a second crest of rock, which bore the principal buildings of the castle, first the principal tower E, adjoining which at an angle was the palace C, and at its south point also the building F, whose slight remains allow it to be recognized as a dwelling. A stairway at the east side leads to the ridge of the upper crest of rock at the height 2, on which also lies the small terrace on the west side of the palace and tower. Differing from the general custom, the tower has its entrance in the ground story, and through it leads the way into the ground story of the palace, and from this into the little court 3 somewhat higher than 2, in which is found the well K.

Note 78. Fig. 38 from Koehler, J. Die Burgen der römisch Pfalz. p. 13, Pls. 1, 2. Strassburg. 1887. Also Krieg von Hochfelden, p. 282.

We know that the palace of its time was destroyed in order to obtain about 40 marble columns, that were in it. These columns could not have been large, since the limited area of the castle itself could only allow a limited extent to the palace. Thus we have to conceive in this a richly treated ornamental building furnished with many little columns, such as was erected at the close of the 12th and beginning of the 13th century. On the contrary, the principal tower is almost entirely preserved. Very low in proportion to the form of the plan, it is one of the few existing castle towers in Germany, that permitted a rather more comfortable habitation, than the previously considered windowless towers, if in a siege of the castle the palace were destroyed, and this tower served as the last refuge. It will again occupy us later. We can regard as a castle in the proper sense only the before considered northern portion. The southern part of the crest of rock, which was once separated by a cut in the rock, forms a castle by itself or two of these, the first with a court L surrounded by wall and a building G, that from its secure position on the rock, we can regard as a not defensible dwelling. If one

of our readers prefers to assume, that a tower was found there, then we certainly cannot prove to him, that he is wrong. The cut was doubtless artificial, and the southern part of the rock isolated by it likewise supported structures, of which nothing more is to be recognized, so that the imagination can be free. We have assumed a simple structure, that served the garrison as a barrack, but are also ready to substitute a defensible structure, whose location made it suitable, if the bridge were destroyed connecting it with G, as a last refuge for resisting an enemy after the fall of the castle.

68. Castle Neuscharrffeneck.

More or less determinative for a series of castles in this region was the form of masses of rock, that rose above the ridges of the hills, even if also few could be utilized like the mass of rock of the Fleckenstein. Without being able to exhaust the examples, we name in Alsace the Wasigenstein, Hohen-Barr near Zabern, Lützelhardt, Gross-Arnsburg in the Zinselweiser valley, the Dagsburg, etc.; in the Palatinate being Rödelstein, Altdaten, Brankenstein, Rheingrafenstein and Falkenstein. Most similar to the Fleckenstein is then the condition at Castle Neuscharrffeneck. There rises a projection from the hill, an hour and a half from Bad Gleisweiler, a mass of rock B C, not unlike that of Fleckenstein, that as the plan in Fig. 38 shows, ⁷⁹ stands across the ridge of the hill, adjoining which is a second similar but smaller hill crest at right angles and almost in the middle.

Note 79. From the same. p. 37. Pl. 12.

Access from the rest of the ridge of the hill is cut off by an artificial cut A, that is sunk in the rock. As a comparison of both plans shows, the rocky ridge B C does not have quite the magnitude of that of the Fleckenstein. How far nature was aided in the form of this mass of rock in order to give it its basal form cannot be recognized; for externally the entire mass of rock is covered by ashlar, so that it appears like a building. We must indeed assume, that on the upper platform was found a roof. Behind this first mass of rock, through which the entrance led and in which different rooms and passages were excavated in the stone, there is also a winding stairway leading upward, and then the wall extended around the hill terrace almost in the form of a triangle with equal sides and

a rounded apex. A cross wall with a round tower I cut off the rounded apex. A second internal parallel wall, that extended to a square tower F, separated an enclosure at the southeast side. A similar and somewhat wider one on the northwest side was separated by the palace G M. To this palace was attached a tower G. In the court extending before the palace now stands in the middle the second ridge of rock D F, forming a dividing wall, whose purpose is not clear, unless a wooden structure found its place on top of it, so that this ridge formed a third line of wall toward the southeast. The centre was apparently first built at the beginning of the 13th century, which we do not find entirely credible, since such a natural fortification as the rock B C offered, certainly would not have been left unused until that time, although perhaps the covering of the rock with ashlar, the lines of walls and other things may only belong to this late time.

We have attempted to give a restoration of the castle in Fig. 39 after the sketches of Naener. If the haste and smallness of Naener's drawings has led us into error in some point, we cannot remove that; yet the attempt must then be made to draw such a castle, whose chief strength lies in the massive main crosswise structure, directly placed in the way of attack. Nothing more is now to be proved of the palace, that we conceive as an unfortified house in the safe part of the castle; we have also added the bridge for access, and must also allow that it may have appeared otherwise, if anyone so believes. Now is found an entire series of roads around the castle made conveniently accessible, that naturally could only have existed in part. We have indicated on our plan in Fig. 33, now we conceive the original way of access to have been.

69. Castle at Nuremberg.

Opposed to the closely grouped castles of Alsace and the Palatinate, even if not so extensive as the Saxon ducal castle of Dankwarderode, the combined castle at Nuremberg, standing on a low rock, and in its isolation entirely dependent on itself (Fig. 40),³⁰ had a considerable magnitude.

Note 20. Our plan here given as well as the opinions are taken from an Essay by the author: -- Die Doppelcapelle auf der Kaiserburg zu Nürnberg und ihre Bedeutung als Mausoleum der Burggrafen. (Anzeiger für Kunde der deutschen Vorzeit.

Vorzeit, 1878. p. 265 et seq.), to which we here refer. The second part of that Essay, that concerns the general plan of the castle, did not satisfy a friendly local historian now deceased, who even believed it must be questioned, on the ground of that old view from which the illustration was made. (See Vocke, H. Das bürgerliche Schloss zu Nürnberg. Die Fränkische Stammburg des Zollern und der fünfseitige Turm, das erste Zollern'sche Bollwerk zum Schutze des deutschen Reiches. Illustrated by F. Dummer. Nuremberg. 1882). However what he says has taught us nothing, and the small cuts added by a friend, quite picturesquely drawn, certainly have nothing superior to ours, in that they were drawn on the basis of mediæval representations; but indeed they show, that the designer had made no study of the general rules of mediæval military architecture, and therefore could not comprehend, that the castle must formerly have appeared otherwise in certain essential points, than it shows itself today in a mutilated condition. The author has enlarged on this in Heft 4 of "Mittheilungen des Vereins für Geschichte der Stadt Nürnberg." In details of secondary importance, particularly in regard to the castle of the 11th century, our present representation differs a little from the earlier one; in particular we are inclined to no longer lay such great stress on the difference of the materials, that we must ascribe the so-called pentagonal tower to the 11th century; yet always sufficiently, to not be able to assume that it is later than the rest of the castle, and was first erected by the Zollerns.

When it originated is unknown; it existed in the 11th century, and it has enclosed the city, that was mentioned before. (Art. 33, p. 34). By the isolation indeed one castle on this place could scarcely be sufficient to receive a garrison large enough to control the broad plain around it. Then the castle was arranged after the city had developed, to serve it as a support and a reserve, also at the same time to restrain it, but to serve as the most comfortable residence for the princes, who were lords of Nuremberg, and where the frequently visiting emperor could hold a corresponding court. At least this was the problem, when the castle was rebuilt in the second half of the 12th century. Positive historical statements concerning the mighty design we have not; especially is it unknown,

and built it, and even in what year this occurred.

Note 81. The ambitious city of Nuremberg found it absolutely necessary to free itself from the authority of the burgrave, which could only be possible if he were driven out of the castle, that completely dominated the city. This definitely occurred under Rudolf of Hapsburg, when the latter arranged the conditions of possession in the empire. Thenceforth the castle appears as "imperial" with a magistrate, only the outer castle remaining to the burgrave. The city soon acquired the office of the magistrate and later also purchased from the burgraves their outer castle, so that after the 15th century it was in entire possession of the whole castle. When the castle was erected in the 12th century, it was just like other castles in the sole possession of its feudal owner, the burgrave, who had to elevate himself as a feudal official to hold and govern, and to whom the extensive lands of the burgraviate were even therefore assigned, that he might be able to support the burden of the office. Since the castle was not the private property of an emperor, no one could have built it, except the burgrave; for the organization of the empire did not permit it to build this for itself.

The ridge of rock is highest at the western end, rising to this from the east, where it slopes into the plain in three terraces. The access was at the eastern side at the foot of the lower terrace through a no longer existing tower, repeatedly mentioned in documents. Opposite this gate tower stands now the so-called "pentagonal tower;" it does not have five sides but in plan approximately forms a square, adjoining which is the half of another cut diagonally, for which plan no other explanation is possible, than that here a smaller half tower was attached to the great square one. This half tower must have been an angle tower of the outer castle, that stood below the first terrace. Since this half tower must have corresponded to other angle towers, its form must then have been approximately as we have represented it on our plan and in birdseye perspective. A wall enclosed this outer castle, surrounding a court according to our assumption, extending to the point, where in the 14th century was erected the tower dotted on our plan, known as a "lookout." Above the outer castle rose the first terrace. It is entirely enclosed externally, par-

particularly next the outer castle; it has its well and is surrounded by a wall, that is strengthened on the south side by a square tower. Adjoining the tower is a chapel; otherwise wooden buildings of different kinds may have occupied the area. Access to this, at the same time the way to the entire castle, leads along the northern wall of this terrace, entirely dominated by the same and by a fourth rectangular tower,³² to which the way goes directly, and at the foot of which is found the entrance to the terrace. If the outer castle were also taken, then access to the first terrace was not at all free. Along the western edge of this then ran the way to the south, entirely dominated by the wall of the second terrace, at whose base was indeed found a ditch now filled, over which on a bridge led to the gate of the second terrace, that was arranged beside a round tower at the south end standing on the rock. Likewise this second terrace has at the middle its still well preserved deep well and is enclosed by walls; also here may have stood various buildings for horses and troopers, that without monumental construction have disappeared in the course of time, and have given place to the existing ruins. Outside the proper terrace stands the double chapel with a tower. Its projection may indicate the width of the ditch, which is now also filled, but was arranged before the enclosing wall of the third terrace. A bridge over the ditch led to its gate, that we conceive as a tower. Besides the wall protecting the third from the second terrace, also existed a defensive wall on the north side, that ended at the west with a tower, which was only removed a few decades since. The entire south side of this terrace toward the city on the contrary was occupied by the palace and the ladies' room with fireplace (the proper living apartments), that were without any means of defense, unless a projecting wooden defensive gallery was connected with the roof. Our plan and the birdseye perspective permit the two divisions of this structure to be recognized. At the western point was added to the residence building another wing in the 15th century, which is not given on our plan. Also this third terrace has its own wall. We know from reliable statements, that in the 15th century the castle enclosure was "built." But a glance at the ground shows, that a similar one must have previously existed, since the area at the

foot of the wall could not remain without defense. Did merely a row of palisades exist, while we find only a wall to correspond to the importance of such a mighty fortress?

Note 82. Its lower part is still preserved under the name of "dwelling of the magistrate of the castle."

We still have to pay attention to the strongly inclined area south of the second terrace and east of the chapel, at whose angle and lower is again arranged a strong rectangular tower, which bears the name of "Hasenburg" (Haas' castle), since at some time the family of Haas had it as a fief. According to our own opinion only here can have been the exit into the lower part of the outer enclosure, while now an entrance to the castle from the city is found there, that cannot have been so originally, since it would have so weakened the castle so much without necessity, that we could only be astonished at the architect who arranged it. That also the now so called "castle gate," that leads into the open from the first terrace, could not have originally existed, results of itself for everyone, that knows the plan of a castle. A castle of the 12th century is never an open road for traffic.

Of special importance for this castle is the system of subterranean passages, that form a connection with the external world and in the last resort made flight possible, when no other means remained to the besieged. Where the entrance inside was originally is difficult to determine, since a principal tower did not exist, that would be regarded as the last refuge and at the same time as a defensive work. Today this is found in the enclosure at the western point of the plan. From thence proceed a number of passages under the city, one of which ending in the City Hall is still well preserved; the external parts of the system are inaccessible; tradition knows that they extended far outside the existing city. ³³

Note 83. They may have already belonged to the earlier castle plan. In Nuremberg the opinion is fixed, that the "private" passages from the city hall outward were so arranged, that the councillors could secretly meet, and also if the city hall were threatened by the populace, they could escape. Technicians certainly will not understand, how such a great work could have been executed secretly, on which many laborers must have been engaged for years, just about as if men wished to build

a railway secretly now. Where would all the material have been taken secretly, that men would have taken from these passages, that in any case were known to but few, since already in the 14 th century were surrounded by mystery, and must have been planned before the city existed? When we find later, that certain masons were secretly engaged on "private work," they certainly did not make the subterranean passages, but at most improved them. When the place for the existing city hall was selected, the burgraves already were no longer in the castle, and it may just be the fact, that one of the castle passages ending there may have determined the choice of this place.

In opposition to other restorations, in that we have given we have added to the Nuremberg castle in an entirely consistent way the projecting wooden defensive galleries on the upper parts of the towers and other buildings, and have only omitted them on the palace, since in general it was not defensible. We will not state thereby, that we had proof of their former existence for Nuremberg and not for other structures. These defensive galleries belong just to the mediaeval system of fortification. For the determination of the first occurrence the evidence is lacking for us. If we see now important they are for the defense, now difficult without them it would be to injure an enemy, who had established himself close to the foot of the wall, we must then assume, that their use was very early, and yet the proof is wanting for us. If therefore we conceive a little castle as without such, it would still be difficult to represent to ourselves as without them a castle erected in luxury at the close of the 12 th century. In one respect we indeed already went too far in our publication in 1876 ("Anzeiger für Kunde der deutschen Vorzeit"). As at the palace, we must omit these wooden defensive passages from the chapel, since certainly the chapel also was not defensible, although its north side adjoined the entrance to the third terrace. In reference to the tower at the chapel, we shall not reject the former assumption, that it was already a fortress tower in the 12 th century. That the upper part of it shows no continuation of the architectural members arranged below is to be attributed to a later rebuilding, in which also the different fragments of another Romanesque building were built in, that now ornament the exterior of the tower. [It be-

bears the name of the "heathen tower." It is remarkable how quickly recollections vanish; little more than 200 years, at most 250, had passed since the building of the tower, when a already Meisterlin in his "Nuremberg Chronicle" terms it a heathen, i.e., a Roman work. And how recently may it have only been, that the various fragments were built in on the exterior!

It would always remain striking in the plan of the Nuremberg castle, that it already no longer shows a principal tower, which served as a last place of refuge, and could still be defended as such, even if the enemy had already conquered the greatest part of the castle; for if in castles as at Flackenstein and Neuscharffeneck, this was impossible or unnecessary, since the rock itself indeed took the place of the tower, yet such an arrangement in Nuremberg would have been well possible, whether now the tower had stood in the middle, whether it had been transferred to the safest point at the west, or if at the east it had opposed the first attack. The centre was not primarily a fortress, but in the first place a residence or court castle, whose dwellings, palace and women's building, stood in the safest place, while the fortification served to keep the enemy away from them. The chapel structure of course in its design may have been conceived as a strong tower, that above the chapel also had stories as a habitation in the most extreme necessity, and may have received defensive works at top, like the tower of the fortress Friesach, to which we shall immediately come; it may be that this purpose originally existed, but in the course of building was dropped, so that men were satisfied with the small fortified tower, which stood over the choir, because they said, that around a fortress thus connected with a city, as the case at Nuremberg, such a great army must be gathered before a siege could begin, that there would no longer be any purpose at last in holding with a few men a single tower.

70. Castle Chillon.

The matter stood otherwise at the fortress to be mentioned now, the very well known and frequently mentioned castle Chillon on Lake Geneva, which we ought not to leave without mention (Fig. 42).³⁴ Its importance was based on this, that it stood at a place, where the hills rose almost directly out of the lake, only a narrow path remaining on the shore, and it

was built on a small island close to the shore, so that it is
 that the castle tower was completely dominated by the castle.
 "and thus the castle of actually isolated. It is a typical
 "castle". The plan is very old; it belongs to the 14th century
 of stone castles, and therefore is very distinctive. It is a
 tower, whose form is determined by the shape of the island.
 Note 84. From Koser, 1. Die Schloßburg, Burgen und Klöster

At A is the entrance from the land. The tower D stands in
 the middle of the court C. The tower with its walls only
 has to the original plan and was surrounded by an enclosure B.
 It was built on the site of the old castle, which was destroyed
 by occurrence of the earthquake (1356), since certainly no
 one will believe it possible in general, that only the tower
 could well actually exist, and that the rest of the castle
 outside it remained open. Here the situation must convince
 us, that the tower was built on the site of the old castle, which
 was destroyed by the earthquake of 1356, since certainly no

at the tower was only made so narrow to obtain space for the
 enclosure; for the castle according to its plan must have
 not too small a garden.

The side on which the attack on the castle might occur, and
 at the same time the one by which the rest was dominated, was
 naturally E lying opposite the road and the foot of the hill;

side of the water to attack was feared, and so was built not a
 hesitates to build the palace in the enclosure, even in the
 14th or 15th century at latest in the 14th century. The old
 buildings as well as the tower H, the enclosure C and the
 tower B were added in the 14th century. They now dominate
 completely the external character of the castle, that the tower
 has more the appearance of one such of the 14th and 15th

th centuries, than of the 14th, although the entire plan be-
 longs to that time.

Note 85. After the completion of our entire work a
 appeared as Belt 22 of "Mittheilungen der antiken Gesell-
 schaft in Zürich" a thorough work of R. Rahn; --"Beschreibung
 und des Schlosses Schönenberg". I. (Leipzig. 1897). In case of a
 later edition, we hope to be able to use the same.

was built on a small island close to the shore, so near it that the traffic route was completely dominated by the castle, and thus the traffic be actually stopped. It is a formal "pass". The plan is very old; it belongs to the first period of stone castles, and therefore is very instructive. It is a mound, whose form is determined by the shape of the island.

Note 84. From Koehler, J. *Die Schlösser, Burgen und Klöster der romanischen Schweiz*. p. 3, Pl. 2. Göttingen. 1886.

At A is the entrance from the land. The tower D stands in the middle of the court C C'. This court with its walls belongs to the original plan and was surrounded by an enclosure B. We must mention just this plan as secure evidence for the early occurrence of the enclosure (Zwinger), since certainly no one will believe it possible in general, that only the inner court wall actually existed, and that the area of the island outside it remained open. Here the situation must convince everyone, that from any beginning onward must have existed outside the inner court wall a low enclosure wall, indeed that the court was only made so narrow to obtain space for the enclosure; for the castle according to its problem must have not too small a garrison.

The side on which the attack on the castle might occur, and at the same time the one by which the road was dominated, was naturally B lying opposite the road and the foot of the hill; here also later the enclosure remained unchanged. From the side of the water no attack was feared, and so men did not hesitate to build the palace E in the enclosure, even in the 12th or in any case at latest in the 13th century. The other buildings as well as the chapel F, the structure G and the tower H were added in the 14th century. They now dominate so completely the external character of the castle, that the latter has more the appearance of one such of the 14th and 15th centuries, than of the 12th, although the entire plan belongs to that time.

Note 85. Already after the completion of our entire work appeared as Heft 52 of *"Mittheilungen der Antiquarischen Gesellschaft in Zürich"* a thorough work of R. Rahn; -- *"Beschreibung des Schloss Chillon."* I. (Leipzig. 1888). In case of a later edition, we hope to be able to use this Essay).

71. Castle at Friesach.

In describing the plan of the city of Peterburg in 1757 (p. 26) was mentioned the castle rising on the Peterburg promontory of the city, that had been at the castle. On the basis of erection of it are looking reliable statements; as it is represented to us (p. 48, 44), it may belong to the 13th or 14th century.

According to the form of the rock, it consists of several parts; however none of these are in connection with the city. If one wishes to take the way to the castle, one must leave the city by the back gate, which in our plan is shown as a curve (p. 48). From thence he goes in a wide curve around the southwest to the east and north sides as far as the southeast side, and arrives already at some height on the north side, at the first gate at Y. At the point of entering a later outwork, through which the way must be pursued farther to the northwest. The entire road lay within shot from the buildings erected on the rock; at the point X he entered the enclosure I directly under the walls of the outer castle, which here has the name of "castle tower", while at its outer end was found the first line of defense toward the Vistula plain. This outer enclosure had its entrance at Y, and consisted of the court 2 surrounded by buildings, from which was reached both the western court 9, as well as through the buildings the inner court 3, adjoined by the principal structures, the palace 6. This plan, already shown in itself, had also at the point two towers, the square one I and the semicircular one K. At the southeast rose to a steep height the highest part of the upper work. Buildings and other castle was with one connection with the outer one, yet was dominated by its rock. Besides in the second gate N led into the inner enclosure 4, that had a tower O, to the gate tower P, from whence further through the enclosure 5 a line the great forecourt 7, where the city wall adjoined at the semicircular tower T. The tower 5, which rises high above the city, gave the old name of Peterburg to the city, that have the hill its name, and was surrounded by the towers 6, 8 and 9. Somewhat higher yet was the tower 6, that was surrounded by buildings and by a ditch (p. 48); the strongest defensive work is seen

71. Castle at Friesach.

In describing the plan of the city of Friesach in Art. 27 (p. 26) was mentioned the castle rising on the Petersberg northwest of the city, that had gathered at the castle. On the date of erection of it are lacking reliable statements; as it is represented to us (Figs. 43, 44), it may belong to the close of the 12 th and the beginning of the 13 th centuries.

Corresponding to the form of the rock, it consists of several parts; however none of these are in connection with the city. If one desires to take the way to the castle, he must leave the city by the Sack gate, which in our plan is designated by Z (Fig. 43). From thence he goes in a wide curve around the southwest to the east and north sides as far as the southeast side, and arrives already at some height on the northeast side, at the first gate at X. At the point 15 adjoins a later outwork, through which the way must be pursued farther to the northwest. The entire road lay within shot from the buildings erected on the rock; at the point X he entered the enclosure I directly under the walls of the outer castle, which bore the name of "castle Lavant," while at its outer side was found the first line of defense toward the Metnitz plain. This outer enclosure had its entrance at Y, and consisted of the court 2 surrounded by buildings, from which was reached both the western court 9, as well as through the buildings the inner court 3, adjoined by the principal structure, the palace L. This plan, already strong in itself, had also at the point two towers, the square one I and the semicircular one K. At the southeast rose to a steep height the highest part of the upper work. Likewise this outer castle was without connection with the upper one, yet was dominated by its rock. Beside it the second gate N led into the inner enclosure 4, that had a tower O, to the gate tower P, from thence further through the enclosure 5 a into the great forecourt 5, where the city wall adjoined at the semicircular tower T. This tower 5, which rises high above the city, bore the old monastic Church of S. Peter at B, that gave the hill its name, and was surrounded by the towers Q, R and S. Somewhat higher yet lies the terrace b, that was surrounded by buildings and formed the inner castle court. The principal tower A completely projects from this; the strongest defensive work is thus

just set outside the main building. The old palace, the new
place of the fortress, was placed there in the middle
ages, is designated by C on our plan, and consists of two mi-
nues joined at a rather obtuse angle. Otherwise the building
of a court further received an entire series of buildings. It
was joined to the main building by a wall, which also exist-
ed. These belonging to the 12th century, it also exist-
ing only in ruins, are indicated on our plan by darker walls.
At F stands the kitchen, which doubtless for the middle fire-
place and chimney is termed now the "mint."

The old entrance to the tower seems no longer exists. Now
one ascends not far from the tower B by a steep and rough pas-
sage from the enclosure D & up to the inner court. Originally
indeed the entrance was in the now lacking eastern wall of D
the palace D beside the principal tower A, once defended by
this; for the palace doubtless was not intended for defense,
as in general the buildings surrounding the court D, which by
their location were protected against almost attack from out-
side. Particularly was it actually impossible to approach the
tower D with a battering ram, as the wall of the tower D after
the entry stood in the enclosure A or on the terrace E after
the fall of A. From the court D the ridge of the rock rises
pretty high through F and G to the building H, which was an
enclosed area, where two gates still rise high in the
air, overlooking the last and strongest place in the castle, F.
Last state of which according to the earlier traditions would
have been expected the strongest tower.

We have intentionally not mentioned our chapter by establish-
ing a general rule, according to which now in the 12th cen-
tury had expanded the castle; on the contrary we have suc-
cessively merely mentioned small and large castles, to show how
varied were the plans, each of which was derived from the spe-
cial conditions prescribed by the ground. But we have to add
a remark of a general kind here to the fact, that in Germany
the strongest final point was not at all intended for general
defense. Comfortable residence and the strongest possible
strength are two considerations, that conflict with each other.
But now in spite of all various indications of the middle
ages, and everywhere even in the castle was born the rule,
which had become the exception, and thus life with its out-

just set outside the main building. The old palace, the show place of the fortress, that was placed there in the middle ages, is designated by G on our plan, and consists of two wings joining at a rather oblique angle. Otherwise the holding of a court further required an entire series of buildings, that indeed originally were of wood, later monumentally constructed. Those belonging to the 12 th century, if also existing only in ruins, are indicated on our plan by darker walls. At F stands the kitchen, which doubtless for its mighty fireplace and chimney is termed now the "mint."

The old entrance to the inner court no longer exists. Now one ascends not far from the tower P by a steep and rough passage from the enclosure 5 a up to the inner court. Originally indeed the entrance was in the now lacking eastern wall of the palace G beside the principal tower A, once defended by this; for the palace doubtless was not arranged for defense, as in general the buildings surrounding the court G, which by their location were protected against direct attack from outside. Particularly was it actually impossible to approach the wing E, while certainly C and G were difficult to hold, if the enemy stood in the enclosure 4 or on the terrace 5 after the fall of A. From the court G the ridge of the rock rises pretty high through 7 and 8 to the building H, which was an unfortified house, where two gables still rise high in the air, occupying the last and strongest place in the castle, that site at which according to the earlier traditions would have been expected the strongest tower.

We have intentionally not commenced our Chapter by establishing a general rule, according to which men in the 12 th century had arranged the castles; on the contrary we have successively merely mentioned small and large castles, to show how varied were the plans, each of which was derived from the special conditions prescribed by the ground. But we have to add a remark of a general kind just to the fact, that in Friesach the strongest final point was not at all arranged for separate defense. Comfortable residence and the greatest possible strength are two conceptions, that conflict with each other. But now in spite of all warlike inclinations of the middle ages, yet everywhere even in the castle was peace the rule, siege and defense the exceptions, and thus life with its cla-

claims for comfort from made his requirements ever more effective, particularly in a great castle, where count was to be held. But still a purely military consideration also came to oppose this need. It is certainly right time and strokes out, greatest surprise, when we see the brave defense of a point, when we follow how step by step the ground is contested with the enemy. But it cannot be denied, that not every time was a great and earnest result attained thereby, that in spite of all losses the defenders always maintained themselves, and finally the last man defended the last sentry box against the entire hostile army. At each castle must be the concern to defend the principal work most decisively; but if this had failed, it could be of little use to do further.

When at Wissembach (Wid. 48) an enemy sold the outer castle, when he had taken the tower A and was stood in the court C, then a defense of that could be of no more use. The enemy could spread his great army over the entire area of the castle; in a tower at B only a few men could yet find room. So long as sufficient men existed, they must vigorously fight around C; if driven from there and limited to B, then only was the fortress to be held generally, so long as A stood. But help might come from outside, could only bring aid so long as the enemy had merely taken the enclosure A, or at least if he already stood in B and besieged the tower A. Therefore it was important, that the last principal work should not stand for long as A resisted and there were sufficient men to keep the enemy from attacking the unprotected castle C. Thereby indeed a general principle was overruled. If we are in general always inclined to assume, that every fortress was substantially so arranged from the first and must contain all principal parts, that also appeared later, we might here see an exception, that only results in consequence of practical experience. We may always believe, that formerly in the at A but at B.

claims for comfort then made its requirements ever more effective, particularly in a great castle, where court was to be held. But still a purely military consideration also came to oppose this need. It is certainly right fine and arouses our greatest surprise, when we see the brave defense of a point, when we follow how step by step the ground is contested with the enemy. But it cannot be denied, that not every time was a great and earnest result attained thereby, that in spite of all losses the defenders always maintained themselves, and finally the last man defended the last sentry box against the entire hostile army. At each castle must be the concern to defend the principal work most decisively; but if this had fallen, it could be of little use to go farther.

When at Friesach (Fig. 43) an enemy held the outer castle, when he had taken the tower A and thus stood in the court 6, then a defense of that could be of no more use. The enemy could spread his great army over the entire area of the castle; in a tower at P only a few men could yet find room. So long as sufficient men existed, they must primarily fight around 5; if driven from thence and limited to 8, then only was the fortress to be held generally, so long as A stood. But help might come from outside, could only bring aid so long as the enemy had merely taken the enclosure 4, or at most if he already stood in 5 and besieged the tower A. Therefore it was important, that the last principal work should not stand too far within the fortress, that indeed could not be taken, so long as A resisted and there were sufficient men to keep the enemy from attacking the unprotected palace C. Thereby indeed a theoretical ground principle was overturned. If we are in general always inclined to assume, that every fortress was substantially so arranged from the first and must contain all principal parts, that also appeared later, we might here assume an exception, that only results in consequence of practical experience. We may always believe, that formerly in the plan of the 11th century, the principal tower did not stand at A but at H.

THE MONASTERY AND THE WORLD

Under the first impression of the passage of time, the
life was generated by the feeling of the nobility of
the world, went into desert in order to spend their lives in
prayer and meditation, far from the world and all earthly oc-
cupations. Their number was not small; they united in a com-
munity, and at the beginning of the 4th
century a number of such ascetics in the desert of upper E-
gypt had gathered around St. Antony, where they ordered their
lives according to fixed rules. This community was entirely
separated from the world and classes for the starting point of
monastic life. But as soon as an organization once existed,
must the absolute disunion of the world be maintained; for the
idea of an organization is always mixed secular, and then a
also the monastic life gradually resorted practical problems,
thereby a meaning for the world, just what the first inmates
of the monastery unconsciously desired to flee from.

Monasteries were to be founded to the peoples of the North, the
monasteries showed themselves as the most suitable means for
this missionary activity, and instead of entirely rejecting
the world, the monks received the problem, to take a formi-
dable part in the world, and to bring it back to the
for secular civilization as of religious life. The monastery
as received the task of clearing forests, creating arable fi-
elds in their places, thus to further the settlement of the
land; they were to care for the religious needs of those ad-
mitted to settle on the lands; manual labor and art, and also
originally architecture, was to be provided by the monks, and
learning was to find a place, where it could flourish undistur-
bed.

Where a monastery cleared off a portion of the primitive
forest, there in the home that the monks built for themselves,
travelers found entertainment and lodging, and so while a
preferred that those roads on which monasteries were found;
indeed occasionally these alone made commerce possible; for
nearly even in the wild villages, especially where none of them
could never leave one, there the monks settled with the expec-
tation to assist travelers, to lodge them, and to pro-

Chapter 6. Earlier Plans of Monasteries.

72. Origin of Monasteries.

Under the first impressions of the teaching of Christ, ascetic men were penetrated by the feeling of the nothingness of the world, went into deserts in order to spend their lives in prayer and meditation, far from the world and all earthly occupations. Their number was not small; they united in a common life devoted to prayer, and at the beginning of the 4th century a number of such anchorets in the deserts of upper Egypt had gathered around S. Antony, where they ordered their lives according to fixed rules. This community was entirely separated from the world and passes for the starting point of monastic life. But as soon as an organization once existed, must the absolute disdain of the world be infringed; for the idea of an organization is always indeed secular, and then also the monastic life gradually reached practical problems, thereby a meaning for the world, just what the first inmates of the monastery unconditionally desired to flee from.

When Christianity and therewith civilization based on the antique was to be brought to the peoples of the North, the monasteries showed themselves as the most suitable means for this missionary activity, and instead of entirely rejecting the world, the monks received the problem, to take a formative part in worldly affairs, and to become a centre as well for secular civilization as of religious life. The monasteries received the task of clearing forests, creating arable fields in their places, thus to further the settlement of the land; they were to care for the religious needs of those attracted to settle on the lands; manual labor and art, and also primarily architecture, was to be practised by the monks, and learning was to find a place, where it could flourish undisturbed.

Where a monastery cleared off a portion of the primitive forest, there in the home that the monks built for themselves, travelers found entertainment and lodgings, and so traffic preferred just those roads on which monasteries were found; indeed occasionally those alone made commerce possible; for indeed even in outlying villages, certainly where hope of gain could never lead one, there the monks settled with the expressed intention to assist travelers, to lodge them, and if nec-

necessary, to give them assistance.

Thereby the monasteries also of themselves became junction points of traffic. From them roads extended on all sides, on which was transmitted the fortunate activity of the wide surroundings, on which all came to seek faith in spiritual things, instruction and help in worldly ones. Thus the monasteries became little cities in form, and just as before the gates of the castle and of the city, settlements developed, whose magnitude and growth depended on the importance, that the place had for the general traffic, and thus increasing settlements surrounded the monasteries, which were entirely as well adapted to form the nucleus of a city, just as a castle formed one.

73. Fortification of the Monastery.

But the traffic routes not only served for peaceful traders; likewise hostile elements traveled along the road, and then frequently threatened the monasteries, against which they must protect themselves, and since they lay in places, which were important for the defense of the country, they must also participate in this. War also raged about them, and they could not withdraw themselves from its influences. Indeed the monk should not brandish the sword; but it whistled often enough about their ears, and they must protect themselves from it.

The means for the protection of the monasteries were at first ideal. Their peace of God, the sanctity of the place should protect them. The monastery stood upon these, and on the plan of S. Gall, which we placed before our readers in Part II, Volume 3, 1st half, of this Handbook (Plate next page 134), nothing is to be seen of fortifications. Building after building lay open in sacred peace; streets as in a city extended between them in regular arrangement; all is dominated by the church, beside which stand two round towers, that indeed are not fortress towers, but still afforded a wide outlook, and at the same time showed the wanderer, whither he had to guide his steps.

Not always did the peace of God protect the monasteries; therefore all of them stood under the special protection of the emperor, and since he could not always be personally near them, he appointed a curator for each monastery, who instead of himself had to protect it. There were secular princes in the vicinity, who understood how to bear weapons and could

[illegible]

oppose everyone, who wished to disturb the peace of the monastery. Meanwhile like so many arrangements of that time, the curators of the monasteries but partially corresponded to their purpose. The curator desired to be not merely the protecting lord of the monastery; while he held his shield over it, he also wished to be its master, and often enough the monastery had greater need to defend itself from the protecting curator, than external enemies.

But also these were not absent. Clear is the description, that Hartmannus gives in his life of S. Viboradæ⁸⁶ and Ekkhard⁸⁷ in the case of S. Galli, of the Hungarian invasion, that S. Gall had to suffer in the year 926. The monastery was entirely open and therefore could resist no enemy. Reichenau⁸⁸ appears then to have been already fortified, and therto the abbot in the year preceding the news of the approach of the Hungarians had caused to be transferred for safety the greater part of the treasures of the monastery and the library. Then abbot Engilbert erected in the immediate vicinity of the monastery⁸⁹ in all haste a very strong castle. In this he placed the remainder of the treasures of the monastery in books, silver and vestments, called out his soldiers,⁹⁰ had the strongest of the monks take arms, and even armed the serfs of the monastery. Armor of cords and wool was quickly prepared, shields were made and slings plaited and other preparations were made. The monastic community rapidly became a courageous war army; the people of the vicinity gathered around the monks in the castle. The Hungarians burned a portion of the abandoned monastery and besieged the castle, but withdrew again after eight days of fruitless exertions, whereon all that had gathered in the castle returned home, and the monks again resorted to their half destroyed monastery. Naturally the castle so quickly erected, that the monks of S. Gall had defended, was an earth castle consisting of wall and ditch, in whose inner rooms were found arrangements for the temporary shelter of those gathered there.

86. Monumenta Germanice historica. Vol. 4. p. 454.

87. St. gallische Geschichtsquellen. Published by G. Meyer of Konow. Vol. 3. p. 194.

88. Helmanni Augiensis chronicon. Monumenta Germanice historica. Scriptores. Vol. 5. p. 67.

89. Probably the so-called Woldburg on the right bank of the Stitter 4.6 miles from S. Gall.

90. Free vassals.

Similarly raged battles around other monasteries, and in the 11th century all must be already fortified. They were partly built in castles, thus for example in the beginning of the 11th century was the monastery of Ebersburg in the castle of that name,⁹¹ as well as the monastery of castell in the castle of the same name in lower Franconia. So Berthold of zwiefalten tells us expressly, that the monastery founded in 1078 was surrounded by wall and ditch, since constantly were hostile invasions to be feared. The monastery was also drawn into many contests, and the monks were compelled to take up arms. But Berthold says,⁹² that he never employed them, but on the contrary strongly blamed them for fighting with the sword; for that is not an affair of the monk, for whom fasting and prayer are more appropriate. Certainly no protecting curator ever utilized them; for those opposed the enemies of the monastery only for their own advantage.

91. Monumenta Germaniae Historica. Vol. 20. p. 10.

92. The same. Vol. 10. p. 72 et seq.

74. Monastery included in a City.

Thus as the monasteries became more the seats of secular activity, they were more required to think continually of defense. This was made easier for them, if they found themselves within the domain and under the protection of the city. There moreover a series of foundations had found shelter, that in many respects were institutions similar to the monasteries, and only differed in regard to the rule over their domain from the existing monasteries, partly within the walls, partly directly before them; their location was preferable in many respects to that in which the isolated monasteries found themselves. So we now also see a series of monasteries rise directly before the gates of cities. Particularly the Scotch (and Irish) monasteries, that in addition to the completed work of Christianizing in their homes, were even founded in Germany, that originated before the gates of cities and were included by the extension of the latter, thus at Nuremberg the Egidien M Monastery, at Regensburg S. Jacob, the Scotch Monastery at Vienna, etc.

75. Cistercian Monasteries.

But also against the secularization of the monasteries at the beginning of the 12 th century a decided reaction made itself felt. Besides the rule of S. Benedict, which until then was followed by all monasteries, there originated that of S. Bernard, which required greater simplicity and severity. The members of the order following the latter were called Cistercians, since they came from the monastery of Citeaux. The number of monasteries, that were erected during the 12 th century on the basis of this new rule, was everywhere very considerable, especially in Germany. In contrast to the Benedictines, who wished to locate at the centres of great traffic, who erected their buildings at points from which the vicinity was dominated, the Cistercians sought the quiet of retired valleys. But the traffic easily found them there. Like the Benedictines 300 years earlier, always where they made a piece of land habitable, there must villages arise and be drawn into the traffic, and if they sought to complete the work of Christianizing in the German north as well as in the Slavonic east, they also spread therewith secular civilization, just as previously the Benedictines had done.

Therefore also in the structural works of the Cistercians no difference from those of the Benedictines is to be recognized, except greater simplicity in the external form treatment. There are certainly extensive monastery designs of the time before the erection of the cistercian monasteries, that no longer remain to us; but if we compare the plan of S. Gall with the plans of monasteries of the 12 th century, and see that in Benedictine as well as in Cistercian monasteries, the cloister adjoins the church in a way similar to the S. Gall plan, that is enclosed on three sides by other rooms, just as in S. Gall, we shall be justified in assuming, that also already previously the group of principal structures, that adjoins the church and cloister, was arranged just the same as later. Separated therefrom, we find on the plan of S. Gall certain buildings and groups of such, each of which served a definite secular purpose. We find the same in the 12 th century among Benedictines and Cistercians. It was no less necessary for the Cistercians to fortify their entire plan, to seek protection behind the earthen wall and ditch or walls of mas-

masonry; for also enemies knew how to find the way to them, and their curators were just like those of the Benedictines, considerate of their own interest.

But we now also from the 12 th and 13 th centuries have more Cistercian buildings remaining to us than Benedictine structures. This may have its basis in this, that the simplicity prescribed by the rule less frequently produced the idea, that the old buildings were no longer according to the time, and therefore must be rebuilt.

76. Structural Design.

In general, monasteries like the castles, before the 12 th century may have been almost exclusively wooden buildings, that were enclosed by an earth wall and ditch with palisades. Just so may all the newly founded monasteries of the 12 th century have been quickly erected at the earliest moment. But doubtless plans and extent were just the same as later. Gradually as the conditions of the time and means permitted, a building or even a part of one was rebuilt in stone. That men then began with the choir of the church was self-evident in the monastery, just as later men commenced there again, if they had plans for enlargement, often before all other buildings were rebuilt in stone. Meanwhile the fortifications must nowise be the last subjected to rebuilding. Since in the 12 th century the castles were rebuilt in stone, and men began, where it was possible, to give stone walls to the cities, it was then also for the monasteries. Also here was the procedure the same, that men only replaced the old fortifications piecemeal by new walls, but otherwise never removed a great piece of the old fortifications before the new substitute was completed.

We have stated above, that a principal difference between the fortification of a city and of a castle did not exist, thus we have to explain it also in regard to the monastery, that men extended a system of single or double walls, with or without towers and with or without ditch, just as the means allowed, around the groups of buildings; first was built the simple wall, then adding the towers. More than one entrance gate was even as little necessary as for castles; but indeed were needed insignificant portals, externally appearing to the eye as little as possible, through which at different si-

the nearest villages in the exercise of the care of souls.

quiet naturally was more prominent in the general appearance of the monastery, than that of artistic confidence, when almost any walls were made as strong as possible. Men recognized immediately, that the monastery was not founded for war like the castle, but like the city in the desire for peace. Still the monastery was also a place of arms, and arms must be taken for all means of the invasion.

VII. Monastery of Glazov.

belongs that of Glazov, of which we give here in fig. 45 a plan of the monastery. The main group, but still allowed to be seen at the outermost entrance through the enclosing wall, at B being the chapel standing beside it, at an inner entrance structure, which by the farm buildings of the monastery. Nothing more can be recognized of the fortifications; the single wall as drawn here was scarcely sufficient to enclose the monastery, and we know that still other fortifications were added. On the contrary, very extensive were the fortifications of Glazov, a plan of which is given by Viollet-le-Duc.

But certainly scarcely a more complete and more beautiful

the eyes of our readers in plan and perspective. The scale is the same as for plan of castle (1 : 12000), so that a comparison of the two plans will show the difference in the scale of the two plans. The plan of the monastery is drawn on a scale of 1 : 12000, and the plan of the castle on a scale of 1 : 12000.

The enclosing wall is double; the inner wall has 2 towers,

sides brothers and servants could pass, when they had to betake themselves to the care of the field work on the adjacent land and meadows, if they were busy in the vineyard or forest, if they visited and regulated the fish pond, or would visit the nearest villages in the exercise of the care of souls. In general the character of peaceful employment and earnest quiet naturally was more prominent in the general appearance of the monastery, than that of warlike confidence, when already the walls were made as strong as possible. Men recognized immediately, that the monastery was not founded for war like the castle, but like the city in the desire for peace. Still the monastery was also a kind of small city, in which care must be taken for all needs of the inmates.

77. Monastery of Cîteaux.

To the oldest monasteries erected in monumental architecture belongs that of Cîteaux, of which we give here in Fig. 45 a view taken from Viollet-le-Duc,⁹³ that indeed only comprises the main group, but still allows to be seen at O the outermost entrance through the enclosing wall, at D being the chapel standing beside it, at E an inner entrance structure, which leads to the free area of the church A, which was surrounded by the farm buildings of the monastery. Nothing more can be recognized of the fortifications; the single wall as drawn here was scarcely sufficient to protect the monastery, and we know that still other fortifications were added.

On the contrary, very extensive were the fortifications of Clairvaux, a plan of which is given by Viollet-le-Duc.

93. From Viollet-le-Duc. Vol. 1. p. 271.

78. Monastery of Maulbronn.

But certainly scarcely a more complete and more beautiful example of an older monastery plan has remained to us than that of Maulbronn, which in Figs. 46 and 47⁹⁴ we place before the eyes of our readers in plan and perspective. The scale is the same as for plans of castles (1 : 12000), so that a comparison is easily possible. The preservation of the entire monastery is still so complete today, that only very slight restorations are necessary to have the old view complete.

94. From Paulus, E. Die Cisterzienser - Abtei Maulbronn. p. 36. Pl. 4. Stuttgart. 1873.

The enclosing wall is double; the inner wall has 5 towers,

in one of which was found the entrance gate; in the birdseye perspective one is represented as torn down. Above the monastery and ascending the valley are several great ponds, that not only served for fish culture, but also contained a sufficient store of water, that each lower one could take from the higher, so that even in dry weather the brook was fed, that leaving the lowest one passed through the plan partly above and partly under ground. Since it ran above ground in the enclosure, we must indeed assume, that it was also furnished with dams and reservoirs, that allowed the enclosure to be put under water, but that even when this was not the case, at a series of places presented an obstruction to the approach to the inner wall, when the outer one had fallen. When also the traffic and thereby the enemy knew how to find the monastery, then it still formed no strong point on a continuous road, yet it should dominate the vicinity; much rather is it self dominated by the adjacent easily accessible heights in such wise, that it was not in condition to prevent a numerous enemy from advancing; therefore it could with the entire fortification or afford by a defense and primarily effect this security against invasion by a straggling horde. Hence the walls are always stately indeed, but still not particularly high or thick. Certainly by attached wooden construction the crown might be made wider, so that on a defensive gallery men could find room. But it is probably that not so many of these existed; for doubtless they limited as much as possible the expense for soldiers, and scarcely took permanently more into service, than could also sleep in the towers and find shelter; for the other buildings scattered around served for definite and chiefly agricultural purposes. The towers are or certainly were quite high and had several stories; but there were only a few of them. If then the assumption be allowed, that still more of them were intended, and only were not built, thus particularly two on the south side of the church (20 on our plan), and two on the north side near buildings 23 and 31, this results from the fact that they were not erected, thus were not found very necessary, evidence that men did not think of complete defense against a great army, and only desired to protect themselves from strolling vagabonds.

Access to the entire plan was thus through the tower, which

then also belongs to the oldest buildings. The rule of the order prescribed, that directly beside the entrance must be found a chapel, which stood at 2, as well as an inn for travelers, which would care for the hospitality of the monastery. This was found in the structure 3, and since men could not trust every traveler, this projected from the plan into the enclosure as a precaution and was entirely dominated by the tower 1, so that they could also be prepared for any refractory inmates. The buildings 4 to 7, 9 to 14 and 17 to 19 contained the proper agricultural structures, stables, storerooms, and dwellings for the servants of the monastery; 10 contained the mill, 18 was the cellar. These buildings are not monumental, are capriciously located just as the temporary need required, and as in the castle courts stood stables and sheds, ready to be destroyed at any moment, where it often happened that they remained longer than monumental structures. Before the principal group of buildings was necessary a great free space, where the gathered multitude of devout pilgrims could encamp, that on festival days desired to visit the monastery church. The well 16 supplied the multitude with free refreshment; otherwise they brought their food themselves or purchased it in the temporary booths, and there was developed a truly gay worldly life often before the booths under tall shady trees, before and after divine service.

An entirely distinct group was formed by the main buildings. Like the palace and ladies' hall of the castle, there was afforded to the inmates a pleasant dwelling, but in contrast thereto was entirely behind locked doors. About the middle court of the cloister 27 was grouped everything. Access was found behind a western vestibule between roogs 22 and 23. The door was fast closed, the monks could only leave the cloister if a special mission called them outside; a stranger only had admission to the interior by very particular permission. The abbot of the monastery was an eminent lord in comparison to the modest brothers; he also had to transact business in the world, in him were the interests of the monastery placed. Great and small men must have free access to him. Therefore he had his own house 34 outside the cloister, connected therewith by a passage 32; at 35 was found a house for the curator, at 36 a hospital, and at 38 the great kitchen garden.

Thus was formed the eastern half of the monastery, entirely separated from the western, a world in itself. We find the same arrangement everywhere in monasteries; but naturally the western half with the proper agricultural buildings and the free space for the collected people were omitted, when the monasteries had withdrawn within the cities, and simple garden walls occurred in place of fortified walls and towers, for these the council of the city already cared, that desired to have no castle within its walls, that did not belong to it. And a castle indeed was always such a fortified monastery.

127. System of Fortification in Syria.

After the conquests in Syria and founded a kingdom, that a
 ed to danger of attack of Mohammedan neighbors, to which it
 also visited at last, the organization of the defense of the
 country was a matter of great importance. The arrangement of
 the cities and castles for protecting traffic, for holding
 from the people, and for preventing Mohammedan invasions was
 based on a careful study of the land and its nature. It is of
 of great interest to see by a map, what places and how they
 were fortified. In contrast to Germany, where in art. 12 (p.
 12) we have called attention to selected examples of the for-
 tification of the Rhine valley as a great series of small ci-
 ties and castles, whose harmonious cooperation was counted on
 upon, it must become necessary here for great masses of troops
 to stand at certain places, and therefore the castles received
 an extent, even when placed high in the hills, that in part
 far exceeds those of the West. In general these greater dis-
 tances already afforded opportunity for the development of in-
 ter natives. But man also found in the East a series of built
 forts, which the Mohammedans erected there, in which the anti-
 one more of fortification has come to a further development.
 In this system tradition and the Sassanid connection was
 also based the military architecture of the Mohammedans, and
 that when the buildings of the castles were erected, thus
 especially the castles and the founding of the Christian king-
 dom in the East must exert an influence on the development of
 the military architecture of the West. Yet man have indeed a
 overestimated here, when they wish to refer plans to this
 influence, when according to the nature of the matter were
 entirely developed in Europe itself. Yet if the buildings in
 one way even proceeded from the conditions there, just as the
 the western structures from the nature of circumstances. In-
 deed one sees, even as far as it went, the Christians in Syria
 is everywhere, both in political life as in military architec-
 ture, to transfer native customs to the East. The stay there
 lasted about two centuries, during which a development was a
 completed here as there. In the beginning no new buildings at
 all were erected; only gradually appeared the necessary, and

Chapter 7. Castles of the Crusaders in Syria.

79. System of Fortification in Syria.

After the crusaders in Syria had founded a kingdom, that was arranged after western models, but was permanently exposed to danger of attack of Mohammedan neighbors, to which it also yielded at last, the organization of the defense of the country was a matter of great importance. The arrangement of the cities and castles for protecting traffic, for holding down the people, and for preventing Mohammedan invasions was based on a careful study of the land and its nature. It is of great interest to see by a map, what places and how they were fortified. In contrast to Germany, where in Art. 12 (p. 12) we have called attention to selected examples of the fortification of the Rhine valley at a great series of small cities and castles, whose harmonious cooperation was counted upon, it must become necessary here for great masses of troops to stay at certain places, and therefore the castles received an extent, even when placed high in the hills, that in part far exceeds those of the West. In general these greater dimensions already afforded opportunity for the development of new motives. But men also found in the East a series of buildings, which the Byzantines erected there, in which the antique mode of fortification had come to a further development. On this antique tradition and its Byzantine continuation was also based the military architecture of the Mohammedans, against whom the buildings of the crusaders were erected; thus naturally the crusades and the founding of the Christian kingdom in the East must exert an influence on the development of the military architecture of the West. Yet men have indeed overestimated these, when they wish to refer plans to this influence, which according to the nature of the matter were entirely developed in Europe itself. Yet if the buildings in the East even proceeded from the conditions there, just as the western structures from the nature of circumstances. In deed one sees, that so far as it went, the Christians in Syria endeavored, both in political life as in military architecture, to transfer native customs to the East. The stay there lasted about two centuries, during which a development was completed here as there. In the beginning no new buildings at all were erected; only gradually appeared the necessity, most

of the buildings, that remain today and afford conclusions on the activity of the owners, belong to the last time of the stay in Syria, and were they contributed to the development of military architecture could come into effect in the

last only very late. Particularly in cases we have followed the western, especially the condition of German castles, not a lot of original influence is to be discerned. Certainly we are not in position to determine on the ground of my own studies in the land, whether what is known of the monuments entirely affords to make possible a final decision; but a cursory examination of the history of the Syrians in Syria for 100 years still allows one to assume, that this is the case, particularly because considerable since Ray's study of the military architecture of the Crusades.

Note 28. Ray, G. *Étude sur les monuments de l'architecture militaire des croisés en Syrie et dans l'état de l'Empire. 1871.*

80. Gavril near Hama.

According to him we need regard the castle of the harbor of Hama as one of the most important castle structures of Syria. We have on the river (p. 4, p. 29) the plan of the fortifications of the city, in which also the castle is shown in the southwest angle. It appears in his plan.

Note 26. The same. Pl. 21, p. 118 et seq.

Although the castle, as far as our city plans, is only one of the castles at which our castle plans are drawn, we will not in unnecessary to repeat what here has been at a greater distance from the city. It is a castle, that we have given in p. 48 as the same castle as the other castles, is drawn as the same castle as that of Hama, so that at once the size of the castle plan of our castle plan is clearly shown in comparison with that in the Hama valley. This is especially necessary, since we have no indication, that this castle is quite different from an elliptical repetition of a western model, and it will compare it with the model of Hama (p. 118).

Note 27. The same. Pl. 21, p. 118 et seq. It is a castle, that we have given in p. 48 as the same castle as the other castles, is drawn as the same castle as that of Hama, so that at once the size of the castle plan of our castle plan is clearly shown in comparison with that in the Hama valley. This is especially necessary, since we have no indication, that this castle is quite different from an elliptical repetition of a western model, and it will compare it with the model of Hama (p. 118).

of the buildings, that remain today and afford conclusions on the activity of the crusaders, belong to the last time of their stay in Syria, and what they contributed to the development of military architecture could come into effect in the West only very late. Particularly in where we have followed the western, especially the condition of German castles, not much of oriental influence is to be determined. Certainly we are not in position to determine on the ground of my own studies in the land, whether what is known of the monuments entirely suffices to make possible a final decision; but a cursory examination of the history of the Europeans in Syria for 200 years still well allows one to assume, that this is the case, particularly become accessible since Rey's Study of the Military Architecture of the Crusaders.⁹⁵

Note 95. Rey, G. *Etude sur les monuments de l'architecture militaire des croises en Syrie et dans l'isle de Chypre*. 1871.

80. Castle near Giblest.

According to him we indeed regard the castle of the harbor city of Giblest as the oldest remaining castle structure of S Syria. We have before given (Fig. 4, p. 29) the plan of the fortifications of the city,⁹⁶ on which also the castle located in the southeast angle plainly appears in its plan.

Note 96. The same. Pl. 21, p. 115 et seq.

Although the scale, as for all our city plans, is only one sixth that at which our castle plans are drawn, we still hold it unnecessary to repeat again here the plan at a greater scale. But we expressly request a comparison with Fig. 2 in regard to magnitudes, where the same castle, that we have given in Fig. 43 at the same scale as the other castles, is drawn at the same scale as that of Giblest, so that at once the size of the simple plan of our oriental castle plainly appears in contrast with that in the Metnitz valley. This is especially necessary, since we have to indicate, that this castle is quite nothing more than an enlarged repetition of a western mound, and if one will compare it with the mounds of Rudesheim (Fig. 13, p. 48), then the different scale will not be forgotten.

The city of Giblest came into Christian possession in 1109 and remained therein till 1190, when it was yielded by agreement to the Mohammedans, to again be in Christian possession from 1199 to 1266. As deduced from the remaining details and

especially the general use of the pointed arch, the castle may have received rebuilding after it was passed into Christian ownership. But the plan in any case belongs to the earlier time, and must have remained about 1100.

The tower (keep) will be mentioned later. As evident, there entered beside this 5 other towers, of which the western one is lacking today. When we believe, that the centre part an entrance from outside, on the contrary that leading from the city to it at the East not existed, we cannot agree with him. Certainly the round wall of the city cannot have had its defensive front toward the castle, but as the outer wall of the castle it must have been turned toward the city, and it we desired to proceed in our investigation concerning the existing remains, we should have then placed towers in the angles, corresponding to those of D and E.

81. Some other castles.

Nearly according to the same plan, as this castle located in the plain, was built the castle of Blanchefort about 1140 on the ridge of a hill between Jerusalem and Beaufort, which in 1187 fell into Saladin's power, and today being destroyed, its plan may be only approximately reconstructed. The rectangular central structure was surrounded by a rectangular wall with 4 towers at the angles; at one end appears to have been placed a forework, like the rectangular.

That the same appears to have been the castle of Tadmor, of which today only fortifications exist. Like the castle of Tadmor it is described as a little castle consisting of a rectangular wall with 4 angle towers and without other and outer wall; one of the corner towers was thicker and more massive than the others; no vestiges of these exists any longer.

82. Castle of Sana.

Besides there entirely regular plans are also found others, in which just as in the West the shape of the rock was determined. We have mentioned in Art. 28 (p. 22) the plan of the city of Sana. This is divided in three parts, of which the castle forms the middle one. We represent this in Fig. 49 at the scale of the other castles (1 : 2000). The plan must belong to about the middle of the 12th century; for in the

especially the general use of the pointed arch, the castle m may have required rebuilding after it again passed into Christian ownership. But the plan in any case belongs to the earlier time, and must have resulted soon after 1109.

The tower (keep) will be mentioned later. As evident, there existed beside this 5 other towers, of which the southeast one is lacking today. When Rey believes, that the centre had an entrance from outside, on the contrary that leading from the city to it at the East not existing, we cannot agree with him. Certainly the south wall of the city cannot have had its defensive front toward the castle, but as the outer wall of the castle it must have been turned toward the city, and if we desired to proceed in our imagination concerning the existing remains, we should have then placed towers in the angles, corresponding to those of D and F.

81. Some other Castles.

Nearly according to the same plan, as this castle located in the plain, was built the castle of Blanchegard ⁹⁷ about 1140 on the ridge of a hill between Jerusalem and Ascalon, which in 1187 fell into Saladin's power, and today being destroyed, its plan may be only approximately recognized. The rectangular principal structure was surrounded by a rectangular wall with 4 towers at the angles: at one end appears to have been placed a forecourt, likewise rectangular.

Note 97. The same. p. 123.

Just the same appears to have been the castle of Ibelin, ⁹⁸ of which today only formless ruins exist. Likewise the castle of Darum ⁹³ is described as a little castle consisting of a rectangular wall with 4 angle towers and without ditch and outer wall; one of the corner towers was thicker and more massive than the others; no vestige of these exists any longer.

Note 98. The same. p. 125.

82. Castle of Saona.

Besides there entirely regular plans are also found others, in which just as in the West the shape of the rock was determinative. We have mentioned in Art. 28 (p. 28) the plan of the city of Saona. This is divided in three parts, of which the castle forms the middle one. We represent this in Fig. 48 ⁹⁹ at the scale of the other castles (1 : 2000). The plan must belong to about the middle of the 12 th century; for in the

year 1897 it was lost to the Government. But today it still
exists, preserved in its extent for the greatest part, as an
example of an oriental feudal castle.

Note 99. From the same. p. 108 et seq. 75. 12.

Of the buildings that covered the terrace within the walls,

vast storerooms and cisterns. The principal side seems to have
been the eastern, attached to which is also the massive ter-
race keep. The stationing of all time has always been sym-
metrical by the ditch and deep in the rock, that separates the east
side of the castle from the city. At its middle remains stand-
ing an obelisk of rock as support of the bridge. This east
side has semicircular towers, like those we find on western
buildings, and these towers like the western only have their
platforms at the height of the defensive gallery, appearing
to be intended to receive defenders. This side must belong to
the first line and date from the first half of the 13th cen-
tury. On the contrary the south side, and as far as can be
known, also the other side must be later, and show the great
rectangular towers, that also on their sides, so far as they
were turned outward, contained slots for main crossbows. The
cross of the wall as well as the tops of the towers were sur-
rounded by battlements, whose verticals have about 2 1/2 ft.
as the width of the space between, being remaining over 6.6
ft. wide to 2.6 ft. clear width of runnel. On the other parts
of the verticals are still to be seen the supports for movable
shutters for the protection of the archers standing at the
openings. The towers themselves have two stories, the lower
one covered by barrel vaults, but the upper by simple yet mas-
sive pointed cross vaults. Striking is the constant use of
the pointed arch in the otherwise entirely simple architecture,
as, built of massive blocks of ashlar with bosses, even if
we assume that the towers were entirely erected just before

187.

As a striking occurrence also appears to us the fact, that
not obviously connected to utilize also the ditch, at least
in time of peace, for the purposes of the garrison, and indeed
it served for keeping the horses, for which the mangers were
cut in the rock at both sides. Holes for the reception of the
and show, that temporary stables were appended as a provision

year 1187 it was lost to the Christians. But today it still stands, preserved in its extent for the greatest part, as an example of an oriental feudal castle.

Note 99. From the same. p. 105 et seq, Pl. 12.

Of the buildings that covered the terrace within the walls, only vestiges remain above ground, underground certainly being vast storerooms and cisterns. Its principal side seems to have been the eastern, attached to which is also the massive two-story keep. The astonishment of all time has always been aroused by the ditch cut deep in the rock, that separates the east side of the castle from the city. At its middle remains standing an obelisk of rock as support of the bridge. This east side has semicircular towers, like those we find on western buildings, and these towers like the western only have their platforms at the height of the defensive gallery, appearing to be intended to receive defenders. This side must belong to the first plan and date from the first half of the 12th century. On the contrary the south side, and so far as can be known, also the other sides must be later, and show the great rectangular towers, that also on their sides, so far as they were turned outward, contained slots for using crossbows. The crown of the wall as well as the tops of the towers were surrounded by battlements, whose verticals have about 2 1/2 times the width of the spaces between, being something over 6.6 ft. wide to 2.6 ft. clear width of space. On the upper parts of the verticals are still to be seen the supports for movable shutters for the protection of the archers standing at the openings. The towers themselves have two stories, the lower one covered by tunnel vaults, but the upper by simple yet massive pointed cross vaults. Striking is the consistent use of the pointed arch in the otherwise entirely simple architecture, built of massive blocks of ashlar with bosses, even if we assume that the towers were entirely erected just before 1187.

As a striking occurrence also appears to us the fact, that men obviously endeavored to utilize also the ditch, at least in time of peace, for the purposes of the garrison, and indeed it served for keeping the horses, for which the mangers were cut in the rock at both sides. Holes for the reception of beams show, that temporary roofs were arranged as a protection

for the fortress. In order to produce a connection with this ditch, there was found in the tower A an exit doorway, from which a way must have extended down into the ditch; meanwhile however the horses could not be brought into the castle court through this doorway, that lay considerably lower than the castle court, to which one passed by a narrow stairway in the wall. Thus there must also have been other connections, for the horses were abandoned to the enemy at once, if the men were compelled to withdraw into the castle. Nothing is to be seen of a second external wall, aside from this, and it has probably in itself, when one also here believes himself justified in assuming before the proper enclosing wall also outworks above or in the valley, as must still think, that on the south side, where between the wall and the slope of the hill remained free a convenient way, this was not uncovered. But we have also a description by an Arab writer of the taking of Saccā by the Moslems, who put forth the greatest exertions, by which they finally succeeded in overpowering the fortress. In this he speaks of 5 enclosures that were in existence, and that we cannot possibly refer entirely to an ordinary fortification. ¹⁰⁰ When we are of opinion, that 5 separate works must have been taken there, this circumstance still seems to us just as unacceptable, since we can find as little evidence in the existing ruins, that were indeed necessarily to secure the possession. Yet it is expressly stated in the narration, that the Moslems climbed up the rock to the castle, and at one place neglected by the Franks took the first wall, then eventually the second and third, that they found there great stores of horses, oxen and provisions, whereas the Franks withdrew into the nucleus work of the castle, but in the knowledge that further resistance would be useless, pursued their defence. It we assume that by this nucleus work is to be understood the keep, then most the existing enclosure have been the third, the others having laid outside it.

Note 100. It is now certainly difficult, if one cannot read the original Arabic text, to depend on translations, that per-

for the horses. In order to produce a connection with this ditch, there was found in the tower A an exit doorway, from which a way must have extended down into the ditch; meanwhile however the horses could not be brought into the castle court through this doorway, that lay considerably lower than the castle court, to which one passed by a narrow stairway in the wall. Thus there must also have been other connections, or the horses were abandoned to the enemy at once, if the men were compelled to withdraw into the castle. Nothing is to be seen of a second external wall. Aside from this, that it has probability in itself, when one also here believes himself justified in assuming before the proper enclosing wall also outworks above or in the valley, we must still think, that on the south side, where between the wall and the slope of the hill remained free a convenient way, this was not uncovered. But we have also a description by an Arab writer of the taking of Saona by the Mohammadans, who put forth the greatest exertions, by which they finally succeeded in overpowering the fortress. In this he speaks of 5 enclosures that were in existence, and that we cannot possibly refer entirely to an oriental imagination.¹⁰⁰ When Rey is of opinion, that 5 separate works must have been taken there, this circumstance still seems to us just as unacceptable, since we can just as little recognise 5 in the existing ruins, that were indeed necessary to secure the possession. Yet it is expressly stated in the narration, that the Mohammedans climbed up the rock to the castle, and at one place neglected by the Franks took the first wall, then gradually the second and third, that they found there great store of horses, oxen and provisions, whereon the Franks withdrew into the nucleus work of the castle, but in the knowledge that further resistance would be useless, purchased their departure. If we assume that by this nucleus work is to be understood the keep, then must the existing enclosure have been the third, two others having laid outside it.

Note 100. It is now certainly difficult, if one cannot read the original Arabic text, to depend on translations, that perhaps are not entirely correct, especially where technical expressions come into consideration.

83. Castle of Karak.

A castle of the 12 th century is that of Karak, the Petra

is after showing by Mass.

east hills at the southwest and northwest ends, across a considerable city. The ridge, which at the southwest end connects the terrace with the hill, is isolated by two ditches cut in the rock and bears a great castle, whose inner court is about 550 ft. long. It consists of two terraces, on eastern and western, and the higher, irregularly western court. Already in 1150 it was surrendered to the Mohammedans after a siege of two years.

84. Castle of Beaufort.

Entirely a similar design also has the castle of Beaufort (Fig. 50),¹⁰¹ except that it is considerably smaller.

Not unlike a European castle, it lies on the crest of a hill of rock, that toward the east falls almost vertically almost 984 ft., while also at the west the fall is very considerable. At the south the ridge of the hill widens into a terrace, on which in the middle stands a city and extends before the castle of the castle, toward which the castle extended a strong line of defense. Beaufort in 1199 fell into Christian hands, in which the castle remained until 1192. Saladin had then captured the castle by surrender after a hard siege, when the Saracens were compelled by want of provisions to desert from their resistance. When it likewise in 1240 was again by Saladin by agreement to the lords of Beaufort, the Mohammedans surprised on revolted, and the Saladin must first besiege the castle and compel his own troops to surrender, before he could fulfill his obligations, and could transfer the fortress to his master, who soon sold it to the Templars, from whom it was however taken again in 1268 by the Mohammedans, whereon it then remained lost to the Christians. Under these circumstances Ray holds it very difficult to determine exactly to what time before the separate buildings now remaining. The drawings given by him naturally place us still less in position to give a new decision; however it may still be recognized, that the original plan of the castle can scarcely have been different, and if the Arab fortress was not already arranged similarly, then must we assume, that Beaufort soon after the capture of

by palisades, and protected the entrance to the castle at the foot of the rock, from which it rose. The work may have originated in the second half of the 13th century, but still had almost entirely disappeared, when Viollet-le-Duc made his drawings. Thus only his design for the restoration is represented by Fig. 180; but we have omitted the greater part of the slots in the circular wall intended for crossbow men, since nowhere do the buildings of the 13th century, not even those of the 15th, show such abundance of slots as he gives here, besides the wooden defensive gallery could receive enough men to send arrows on all sides.

This independent structure is connected with the gate of the castle by a narrow passage, that ascends the rock. In the view it indeed appears as if Viollet-le-Duc wished to represent the entrance as if it led into the circular work. Yet from its plan it is to be seen, that behind it the bridge towers and the gate lies in the passage, so that the rear part of the bridge is swept by shots from the outwork, that is entirely separated, the way not leading through it. The passage lies between high walls, whose crown is stepped, and is divided into different portions by cross walls, so that each of these must be separately taken. The upper portion extends directly to F at the foot of the upper castle wall, where it turns and leads into the interior beside the tower G, first again to a flight of steps, which is easily defended, and over which one first ascends to the platform of the court.

Note 217. From the same. Vol. 1. p. 359.

160. Bastile at Paris.

Meantime most of such outworks have just the purpose for the entrance of the city to lead through them, in order not merely to interrupt it more easily, but also to hold it as long as possible within reach of the lines of defense. Such a structure particularly adapted for this purpose was the Bastile at Paris, that was built in the 14th century, and whose destruction is counted among the heroic deeds of the French revolution, whose centennial celebration by the French occurred not long since. Fortunately representations exist and are sufficiently intelligible, so that we can reproduce from Viollet-le-Duc ²¹⁸ in Fig. 181 a birdseye perspective.

Note 218. From the same. Vol. 2. p. 173.

the year 1139 would be so arranged as drawn in the plan in F Fig. 50. Then the fortress was besieged in 1192 and 1240, on which occasions it may have been so treated, that its possessor preferred to leave the rebuilding to the rich order of Templars. To this restoration made at the middle of the 13th century must belong most of the existing works. For this in particular also speak the massive stone slopes, which surround the south and west sides next the ditch, and whose design we meet with on several works of the 13th century.

Of the old plan we can only speak in the main lines; to it may belong the mighty ditch cut in the rock, that encloses the castle on the entire west side, enlarged to double width at the south with an offset like a terrace. The ascent from the east side was scarcely possible; thus it may have been on the west side from A to B, then passing along the ditch and at C on the eastern terrace, which was defended by the towers D and E, that in connection with those at I and K and a tower S, which necessarily must have stood over the cistern now found there, formed a mighty front toward the city. The eastern terrace, which rose above the slope, was guarded by towers, and defended by a wall according to the shape of the projection F of the rock toward the northern ditch, in case any enemy should climb up in a ravine there. But he would then find particular resistance in the tower G, which still already in the first plan had a probably round predecessor. Above the eastern terrace rises the approximately triangular inner court of the castle, the entrance to which over the rock was led to H, directly under the protection of the upper wall, where it enters an enclosure, then to pass through a gate L by means of a passage like a tunnel into the inner castle court, a way that could be made extraordinarily difficult by the defense. Of monumental earlier buildings there only remains in this court the tower M and the hall-like building O. Other monumental and temporary buildings may have occupied the remaining space, particularly the southern part at L. In any case a principal tower belonged to the original plan; we are inclined to seek it at G, and believe that M first became such in the 13th century.

Nothing more is to be recognized of a fortification of the city, than at the southern point a work with great cisterns

and P. in which Bay, contrary to our opinion, may recognize the only work of the Templars built in Besford in 1260, and that he designated as a new castle, but which was at once destroyed after the conquest of 1266. This surmise is also further confirmed by the fact that the castle was useless.

25. Castle at Besford.

We must count Besford according to its plan, even also if the castle was rebuilt by the Templars, there now arose in 1260-1261 the castle of the orders of knights. While the castle belonged to the 12th century, the castle of the orders was characteristic of the 13th century.

In the year 1188 was transferred to the Templars Besford in the possession of the Christians since the beginning of the 12th century, when they fortified it, and made the castle (p. 102) their principal place of arms.

Note 102. From p. 102. p. 69 et seq. p. 102.

It was approximately the form of a quarter ellipse, whose longer axis from north to south forms the seafront, the shorter one extending from the shore into the land from west to east, on the east side adjoining the wall of the city. The elliptical line of the enclosure of the castle consists of a double wall with towers, and a double ditch out in the rock into which the sea could enter, and entirely separate the castle from the city. About at the middle of the north side project from the external enclosing wall a mighty gate tower G into the ditch and parallel with the length of the wall, whose as beginning - on the former seafront, now somewhat recessed, started from the land. At one place B was found a sliding bridge. A number of buildings in the interior belong to the castle of the 13th century. The most important part must have been the principal tower B, which was separated from the castle by a ditch also out in the rock and filled from the sea, so that it could only be reached by boats. Unfortunately it is entirely destroyed, so that only few ruins remain. In consequence of this it is impossible to determine whether it is the tower, which already in 1188 so victoriously resisted the endeavors of the Mohammedans in the siege of Tortosa by Saladin, and which in the year 1211 William of Orange destroyed.

P and R, in which Rey, contrary to our opinion, may recognize the only work of the Templars, built in Beaufort in 1260, and that he designates as a new castle, but which was at once destroyed after the conquest of 1268. This surrender also further resulted from an agreement, after the garrison had recognized that further resistance was useless.

85. Castle at Tortosa.

Besides the castles of the great feudal nobles, with which we must count Beaufort according to its plan, even also if the castle was rebuilt by the Templars, there now arose in Syria further the castles of the orders of knights. While the first belong to the 12 th century, the castles of the orders are characteristic of the 13 th century.

In the year 1183 was transferred to the Templars Tortosa, in the possession of the Christians since the beginning of the 12 th century, when they fortified it, and made the castle (Fig. 51) ¹⁰² their mightiest place of arms.

Note 102. From Rey. p. 69 et seq. Pl. 8.

It has approximately the form of a quarter ellipse, whose longer axis from north to south forms the seashore, its shorter one extending from the shore into the land from west to east, on the east side adjoining the wall of the city. The elliptical line of the enclosure of the castle consists of a double wall with towers, and a double ditch cut in the rock into which the sea could enter, and entirely separate the castle from the city. About at the middle of the north side projects from the external enclosing wall a mighty gate tower C into the ditch and parallel with the length of the wall, whose beginning - on the former seashore, now somewhat retired, started from the land. At one place B was found a sliding bridge. A number of buildings in the interior belong to the course of the 13 th century. The most important part must have been the principal tower E, which was separated from the castle by a ditch also cut in the rock and filled from the sea, so that it could only be reached by boats. Unfortunately it is entirely destroyed, so that only few ruins remain. In consequence of this it is impossible to determine whether it is that tower, which already in 1183 so victoriously resisted the endeavors of the Mohammedans in the siege of Tortosa by Saladin, and which in the year 1211 Wilbrand of Oldenburg pre-

prizes as found by a kind of chance. It occurs in extent
 of the middle ages. If our friend be correct, it
 is certain that all the massive battlements which are
 of various military structures, which serve the twofold pur-
 pose of presenting great difficulties to penetrating and in-
 creasing the resistance to assaults, in consequence of the
 thickness of the latter, particularly as a result of the de-
 struction caused by the earthquakes of 1802, which first com-
 menced in the 13th century, when this keep with its mas-
 sive battlements may also first belong to the 13th century.

The massive battlements to be mentioned later may belong
 to the beginning of the 13th century, about the second decade.
 But they could no longer be seen by Wilbrand, or at least the
 outer wall and not have yet existed, since he emphasizes the
 nature of the towers as it, to which the one that surrounded
 him so much is called as a twelfth. On the inner wall alone
 could about 11 towers be conceived, if one takes of those
 existing in the 15th as remaining. Ray is surprised by the lux-
 ury of the materials of this fortification, that is found in
 no other structure of towers, and he is of opinion that various
 battlements must have been placed extensively for it. Indeed by
 the massive earlier works could so beautifully uniform battlements
 when towers be found in such abundance? The Templars must have
 as first constructed towers in 1101.

30. Castle Chastel-Blanc.

Greatly different from this castle of the Templars located
 at the sea was this one, which under the name of Chastel-Blanc
 and (the 10th) 10th century one of the foothills of the mountains
 above Tortosa and likewise related to the Templars. The de-
 struction of the year 1162 reached and destroyed the cas-
 tle, after it had already been taken and destroyed by the Mo-
 hammedans in 1167.

Note 108. From the same. p. 65 and 66. 9.

We must indeed attribute the inner part of the structure to
 the beginning of the 13th century, although Ray would assume
 still the 12th century for the castle with its pointed tower
 and besides the external battlements wall alone to the
 middle of the 13th century. The arrangement, whose plan is
 given in the 52, again recalls the western manner. Placed as
 an oval on the top of the hill, it well appears to have been

praises as founded by a king of France. It exceeds in extent all towers of the middle ages. If our drawing be correct, it is certain that all the massive battering walls at the foot of Syrian military structures, which serve the twofold purpose of presenting great difficulties to undermining and increasing the resistance to earthquakes, in consequence of the frequency of the latter, particularly as a result of the destruction caused by the earthquakes of 1202, which first came into use in the 13 th century, then this keep with its massive battering base may also first belong to the 13 th century.

The massive double walls to be mentioned later may belong to the beginning of the 13 th century, about the second decade. But they could no longer be seen by Wilbrand, or at least the outer wall must not have yet existed, since he emphasizes the number of the towers as 11, to which the one that surprised him so much is added as a twelfth. On the inner wall alone could about 11 towers be conceived, if one thinks of those existing in Fig. 51 as remaining. Rey is surprised by the luxury of the materials of this fortification, that is found in no other structure of Syria, and he is of opinion that antique buildings must have been robbed extensively for it. Indeed by plundering earlier works could so beautifully uniform ashlars with bosses be found in such abundance? The Templars must have first surrendered Tortosa in 1291.

86. Castle Chastel-Blanc.

Entirely different from this castle of the Templars located at the sea was built that, which under the name of Chastel-Blanc (Fig. 52) ¹⁰³ crowns one of the foothills of the mountains above Tortosa and likewise belonged to the Templars. The great earthquake of the year 1202 reached and destroyed the castle, after it had already been taken and destroyed by the Mohammedans in 1167.

Note 103. From the same. p. 65 and Pl. 9.

We must indeed attribute the inner part of the structure to the beginning of the 13 th century, although Rey would assume still the 12 th century for the chapel with its pointed tunnel vault, and ascribes the external enclosing wall alone to the middle of the 13 th century. The arrangement, whose plan is given in Fig. 52, again recalls the western mound. Placed as an oval on the top of the hill, it still appears to have been

surrounded by an oval wall, that we have represented on our drawing, although only at the east and west sides small portions remain, while on the other sides, the heaped earth has slipped down the hill. Now the massive wall with its battering ashlar at its base forms the external enclosure. At three places it is strengthened by the towers O, P and Q. According to the analogy of western buildings must we perhaps assume, that it was first constructed without towers, and that the towers were first added gradually, and even more of them were to be built, particularly on the west side, if conditions had allowed. An entrance building, whose plan is not entirely clear and includes remains of different times, leads into the interior. Perhaps at the northeast at B was the passage over the earthen wall; perhaps also men passed over the ridge of the hill from A at the south side over the wall; then they went through an outwork and the gates D and E into the great entrance court. In this stands the great tower K surrounded by walls, to which one passed by the route F G H J; on the west side, where the entrance to the tower was found, the enclosing wall was doubled, and on the exterior of this is still added a small projecting structure M. The space between the inner and outer walls was occupied by vaulted structures, that served as workshops, magazines and stables. The massive principal tower contained in its ground story a great and lofty chapel, above this being a hall in two aisles, and at the top a platform for defense surrounded by battlements. Below the chapel, as at the tower of Giblet, is cut out a water cistern of great extent. The castle with a garrison of 700 men fell into the hands of the Egyptians in 1271.

87. Castle Starckenberg.

The part of the Germans in the crusades was not so considerable as that of the French or Franks, as the orientals named the crusaders, and still term Europeans today. Meantime it had found embodiment in the Teutonic order of knights, that also found expression in the erection of a castle. That was castle Starkeuberg, that was built by the Teutonic order where the hills of Galilee approach the Lebanon, on the edge of a hill with outlook on the sea between Tyre and Acre, at which latter place the order had its seat. Like a castle transferred from the banks of the Rhine to the Orient, it appeared with

the German name, besides which the French name of Hirsfort was certainly also common in the 18th century, according to the author of the Essay on the military architecture of the 18th century. Meanwhile the tradition existed by the German name may have contributed much to this; for unfortunately it is as found, according to the description, that this original castle of the Teutonic order is in a condition of advanced destruction, that scarcely allows a decision concerning its former appearance. But so far as such a decision is possible, as for the principal tower, even the relation to the other original castles is not recognized.

Note 104. See the same. p. 113 and p. 115.

In the year 1829, after Hermann von Salza had obtained the ruins, instead of an earlier structure was begun the existing one, for the purpose of safely preserving there the treasure and the archives of the order. Below is the plan (Fig. 58) stands at G the ruins of a building, that by some is referred to the castle. If this be the case, then certainly must the little river H (the present Arns name is Garsch-Körn) and its branch stream I. The ascent follows the dotted line a from the north side around the west side of the hill and along the south side, till the entrance is found at A at the southeast angle. Mentioning whether this line indicates the original way is important; in any case it is against the ruins, that those ascending to the castle must have it on their left and not on their right side. Certainly now the only exception is the wall. At A the way leads within the enclosing wall of the castle with its towers. The terrace proper occupies the southern half B. There is found the principal tower D, whose dimensions in plan can be shown in no German castle. West of this line an enclosure, which the enclosing wall yet stands a short corner tower, that contains a well in its lower part; it stands on a rock between two great artificially widened ravines, and thus covers, as an isolated fortress, the weakest part of the castle just at the place, where over the ridge of the hill one found the easiest way for attack. We recall on this, that a

its German name, besides which the French name of Montfort was certainly also common in the 13 th century, according to the author of the Essay on the military architecture of the crusaders. Meanwhile the imagination excited by the German name may have contributed much to this; for unfortunately it is so found, according to the description, that this original castle of the Teutonic order is in a condition of advanced destruction, that scarcely allows a decision concerning its former appearance. But so far as such a decision is possible, as for the principal tower, even the relation to the other oriental castles is not recognized.

Note 104. See the same. p. 143 and Pl. 15.

In the year 1229, after Hermann von Salza had obtained the ruins, instead of an earlier structure was begun the existing one, for the purpose of safely preserving there the treasure and the archives of the order. Below in the valley (Fig. 53) ¹⁰⁵ stands at G the ruins of a building, that by some is regarded as a chapel, but by Rey is considered a house belonging to the castle. If this be the case, then certainly must the fortifications extend down into the valley to the bank of the little river H (the present Arab name is Quady-Korn) and its branch stream I. The ascent follows the dotted line a from the north side around the west side of the hill and along the south side, till the entrance is found at A at the southeast angle. Meantime whether this line indicates the original way is uncertain; in any case it is against the rule, that those ascending to the castle must have it on their left and not the right side, certainly not the only exception to that rule. At A the way leads within the enclosing wall of the castle with its towers. The terrace proper occupies the southern half B. There is found the principal tower D, whose dimensions in plan can be shown in no German castle. West of this lies an inner court C, and E is a long hall structure with a narrow forecourt. Under all these buildings are found cisterns and cellars. Outside the enclosing wall yet stands a great square tower, that contains a well in its lower part; it stands on a rock between two great artificially widened ravines, and thus covers, as an isolated fortress, the weakest part of the castle just at the place, where over the ridge of the hill are found the easiest way for attack. We recall on this, that a

similarity located tower is found as the towers of Hissle.

located in the inner part by a bridge when the tower was
of the castle. About a further stage in the year 1800, since
a restored and longer since the castle was surrounded in
1271, and was destroyed by the Mohammedans.

105. From the same, 74. 15.

35. Isolated towers.

Besides the great castles there existed a number of smaller
stations, where only a single tower was erected, as such dis-
tances from each other, that an unbroken connecting line was
produced, without that the single tower with its small garri-
son having the character of resistance to a hostile army. Two
stories high with a platform on top, they have sides of 15 to
40 ft., underground being a water tank cut in the rock. To re-
reach the second story and from thence the platform was re-
ached a ladder, since the doorway was found at the height of
the beginning of the vault several yards above the ground. It
very resembles the tower of Tula from the great number of a
similar building, that no reason to follow the account of a
gar one of them, which was situated on the street by a castle
narrow and somewhat with the account. We have no certain state-
ment of the building of these towers. They may belong to the
beginning of the 18th century. Since then they exhibit pro-
gress in contrast to the previously described German buildings,
back they are rather situated for a distant contest, than
close. They exhibit narrow aloft behind which could be found
places for archers or crossbow men, and the battlements of the
the platform have slots in the verticals, by which the archers
could send their arrows without being compelled to appear in
the space. Since the slots were also found still lower than
the space, and passed obliquely downward through the wall,
one could still hit an enemy through them, who had already
come quite near. These slots in battlements are also found
tolerably late in Germany. Likewise in the different stories
of the towers are they seldom found as systematically ar-
ranged as here. They mostly have the purpose of admitting light,
which is the reason why they are situated so low in the
towers, that are situated situated so low in the
towers, that are situated situated so low in the

similarly located tower is found at the fortress of Trifels. (Figs. 37, p. 77). Like that, so may also this have been connected in its upper part by a bridge with the inside buildings of the castle. After a fruitless siege in the year 1266, after a reiterated and longer siege the castle was surrendered in 1271, and was destroyed by the Mohammedans.

105. From the same, Pl. 15.

88. Isolated Towers.

Besides the great castles there existed a number of smaller stations, where only a single tower was erected, at such distances from each other, that an unbroken connecting line was produced, without that the single tower with its small garrison having the problem of resistance to a hostile army. Two stories high with a platform on top, they have sides of 33 to 40 ft., underground being a water tank cut in the rock. To reach the second story and from thence the platform was required a ladder, since the doorway was found at the height of the beginning of the vault several yards above the ground. R. Rey represents the tower of Tokle from the great number of similar buildings, that he allows to follow the somewhat larger one of Kermel, which was adjoined on two sides by a quite narrow and somewhat wider forecourt. We have no certain statement of the building of these towers. They may belong to the beginning of the 13th century. Since then they exhibit progress in contrast to the previously described German buildings, that they are rather calculated for a distant contest, than those. They exhibit narrow slots behind which could be found places for archers or crossbow men, and the battlements of the platform have slots in the verticals, by which the archers could send their arrows without being compelled to appear in the space. Since the slots were also found still lower than the spaces, and passed obliquely downward through the wall, one could still hit an enemy through them, who had already come quite near. These slots in battlements are also found tolerably late in Germany. Likewise in the different stories of the towers are they seldom found as systematically arranged as here. They mostly have the purpose of admitting light, rather than for shooting. Certainly in France they already occur in plans, that are likewise attributed to the 12th century; yet whether they were brought here from Syria or from

Note 106. From the same. p. 82 of sea., p. 18. 4 to 7.

thence to Syria must remain a question, so long as the priority here and there is not proved by accurate historical investigations.

89. Castle of Knights of S. John, "Krak of the Knights."

The most important of the castles of the orders, and at the same time the largest of them is the castle of knights of S. John, which bore the name of "Krak of the Knights." It is a military plan of the first rank, which dominated the road from Homs and Hamah to the Orontes near Tripoli and Tortosa.

Formerly occupied by the Kurds, the Krak was taken by the Christians about 1125, and was transferred in the year 1155 to the knights of S. John with other castles. How it then appeared cannot be established with certainty. It was repeatedly injured by earthquakes in 1157, 1169 and 1202, and it seems to have been entirely rebuilt after the last one. So long as it was in Christian hands, it was in the 13th century of the highest importance, always the greater the more the Christian rule shrank, and we must therefore assume, that its strengthening was constantly continued. Thus it was held until in 1271 after a siege of two months, it was surrendered to the Mohammedans. After the transfer the Krak was again restored by its new possessors, so far as it had suffered injuries, and it still appears today almost as when the knights left it in 1271. We give its plan in Fig. 54¹⁰⁶ and a birdseye perspective in Fig. 55,¹⁰⁶ in which the few restorations necessary are made, in order to present the design as it was originally.

Note 106. From the same. p. 39 et seq., Pls. 4 to 7.

On the summit of a hill sloping to the north and east, at the west separated from the other hills by a ditch, that also extends around the work at the south, though indeed not very deep, the castle forms approximately a trapezoid, as whose chief side of attack is to be regarded the southern, where thus the strongest defensive works were arranged. The castle consists of two main parts, each of which has its principal works at the south, the inner nucleus being surrounded by walls and towers, whose buildings are covered by terraces and enclose the court, with the outer enclosure. Evidently then is this the latest portion, even if only a few decades lie between the erection of the principal work and that of the enclosure. About this outer enclosure may further have been

directly under a machine gun and mortar, which in the course of time doubtless would have received a mechanical treatment, and not the Christian rule previously stated; for so important and however sound was the inner line of defense, then so far as it was executed, that the outer one could not be maintained, and it is not probable, that men had the intention to allow the enemy simply and directly to come to it. Not even a ditch cut in the rock over which lay a bridge, lies before the tower at the east side, in which is found the entrance at A. The small depth of the ditch at the south side shows us, indeed, that the work was not entirely completed there, when the castle must be left, and that not only there was this connection, but such had also been undertaken on the east side. We believe that in the course of the work must be assumed the last stage of the development, which Christian military architecture had reached in Syria.

The tower at A was therefore not so simply to be taken. It lies lower than the towers of the enclosure. The doorway of access at A could be defended by the three days above it with to the south, but turned at the southern point behind the tower C and ascended to the tower F. The two southern portions of the tower to the sky, so that even if the enemy had reached the tower, it still remained always possible to beat him with arrows and stones from the enclosure, as well as from the platform of the tower C. But the entrance to the enclosure was found under the protection of the tower F only at the last end of B, where the road led through the tower F and the tower G also into the inner court. Through the doorway A therefore the enemy could not pass into the enclosure.

If he desired to make a lodgment therein, it was necessary for him to overthrow the outer wall at some point and stone the tower. He not allow the enemy to succeed in this, it was not merely so arranged, that from his position outside the light could be carried on behind the battlements; but by passages found in the interior, the defenders could pass in them at different points, and through slots cut a ball of stone on these approaches. But what was particularly important is the series of rays extending around, through whose small floors one could beat the enemy, who wished to engage at the foot of

placed wooden structures and earthworks, which in the course of time doubtless would have received a monumental treatment, had not the Christian rule previously ceased; for so important and however strong was the inner line of defense, then so far as it was executed, must the outer one avail as the principal line, and it is not probable, that men had the intention to allow the enemy simply and directly to come to it. Not even a ditch cut in the rock over which led a bridge, lies before the tower at the east side, in which is found the entrance at A. The small depth of the ditch at the south side shows us indeed, that the work was not entirely completed there, when the castle must be left, and that not only there was this continued, but such had also been undertaken on the east side. We believe that in the buildings of the Krak must be assumed the last stage of the development, which Christian military architecture had attained in Syria.

The tower at A was therefore not so simply to be taken. It lies lower than the terrace of the enclosure. The doorway of access at A could be defended by the three bays above it with open floors. One then passed first into a tunnel B, that ran to the south, but turned at the southern point behind the tower C and ascends to the tower F. The two southern portions are open to the sky, so that even if the enemy had reached the tunnel, it still remained always possible to pelt him with arrows and stones from the enclosure, as well as from the platform of the tower C. But the entrance to the enclosure was found under the protection of the tower F only at the last end of B, where the road led through the tower F and the building G also into the inner court. Through the doorway A therefore the enemy could scarcely penetrate into the enclosure. If he desired to make a lodgement therein, it was necessary for him to overthrow the outer wall at some point and storm the breach. To not allow the enemy to succeed in this, it was not merely so arranged, that from its platform outward the fight could be carried on behind the battlements; but by passages found in the interior, the defenders could pass in them at different heights, and through slots cast a hail of arrows on those approaching. But what was particularly important is the series of bays extending around, through whose open floors men could pelt the enemy, who wished to engage at the foot of

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the wall in its destruction.

Of the towers of this external wall, the three of the east side are rectangular, the others are round; only in the middle of the south side stands a lower but massive square tower. Its height is indeed only so small, that in modern language one must rather speak of a bastion than of a tower; Fig. 56 106 gives the internal view of it in its present condition. It is evident from this that its platform only rose one story above the ground of the enclosure. It is surrounded by a strong wall, through whose length extended a vaulted passage. To make its external side more resistant against shots, a strengthening is arranged outside, built on corbels. Between these corbels are found slots in the floor, through which direct shooting of the assailants was possible. A passage on this wall was furnished with a series of battlements. Similarly as for this tower is the arrangement also for the two rectangular towers of the east side, located south of the entrance and with massive batter on the lower parts, as also for the round towers and the intermediate wall of the east side. The greater part of the south and west sides of the enclosure is so arranged, that the water was collected there, that flowed from the other parts; it was doubtless connected with the cisterns, that are placed under the inner castle. The inner work rises on the south and west sides above a batter of such thickness, that scarcely anyone would attempt to undermine the wall. Yet hardly under the otherwise massive walls of the work did even the battering wall extend; doubtless we have here only an inclined facing of the rock before us, on which stands the upper structure. On the north and south sides still appears the rock without such a covering, whose execution was doubtless postponed to a later time, but never came to construction. Fig. 57 106 shows us the middle and western of the two towers, the first of which was further strengthened above the batter by an external defensive passage at its base. Between the towers are not merely arranged simple walls, but wide structures covered by terraces, on which could be placed casting machines, and that were surrounded by massive walls, which besides the upper series of battlements also shows the passage in which a lower row of defenders could move. A great flight of steps leads from the court I to the terraces, of which N is

the lowest, while E, G and L, as well as O, P and Q represent the actual crown of the wall. In the tower H is found the chapel, on the other hand in a reentrant angle in K is an exit to the enclosure. The portion V of the wall rises higher than the rest; but highest is carried the part S of the wall, namely up to the platforms of the towers R and T, that were connected by its crown. In M is found a hall structure.

One sees at once by the great and extensive buildings, that the Krak was a castle, that should receive a far greater garrison than others. Wilbrand of Oldenburg speaks of 2000 men, who were found there, when he saw the castle in 1211. The more the rule of the crusaders failed, the more important became their last supports, and so much the more was it necessary to increase their defensibility and their garrison. How many defenders the fortress contained at the time of the surrender to the Mohammedans in 1271 is not stated within our knowledge; if Chastel-Blanc had 700 of them, there must have been here well toward 4000. The Mohammedans put the castle again in condition, so that it now became for them one of the most important supporting points, until the entire departure of the crusaders.

The last principal fortress of the knights of S. John was Margat, which had many similarities in form with the Krak, particularly also the massive battering masonry, the strong round towers, the series of bays, etc., and which they held until 1285.

The construction of the castle, which was begun in 1150, was completed in the year 1160. It was built on a hill, and was surrounded by a moat. The castle was built by the Count of Flanders, and was one of the most important castles in the country. It was built in the style of the Norman castles, and was one of the best examples of the Norman style in the country. The castle was built on a hill, and was surrounded by a moat. The castle was built by the Count of Flanders, and was one of the most important castles in the country. It was built in the style of the Norman castles, and was one of the best examples of the Norman style in the country.

One of the most prominent and important of these was the castle of Lille. It was built by the Count of Flanders, and was one of the most important castles in the country. It was built in the style of the Norman castles, and was one of the best examples of the Norman style in the country. The castle was built on a hill, and was surrounded by a moat. The castle was built by the Count of Flanders, and was one of the most important castles in the country. It was built in the style of the Norman castles, and was one of the best examples of the Norman style in the country.

The castle of Lille was built by the Count of Flanders, and was one of the most important castles in the country. It was built in the style of the Norman castles, and was one of the best examples of the Norman style in the country. The castle was built on a hill, and was surrounded by a moat. The castle was built by the Count of Flanders, and was one of the most important castles in the country. It was built in the style of the Norman castles, and was one of the best examples of the Norman style in the country.

Chapter 8. The later French castle Plans.

90. Castles from the end of the 12 th Century.

The considerable development, that military architecture especially in the plans of castles, was taken from the middle of the 12 th to the middle of the 13 th centuries in Syria, was compelled by the serious situation in which the crusaders fell more and more. In Germany was no ground for such development in that period. Indeed with the decay of the imperial power appeared for the individual the constantly increasing necessity to maintain his castle capable of resistance; but since the invasions of foreign peoples was excluded, and since in consequence of the continued despersion of forces by the ceasing of the organization of the feudal system, great armies became ever more difficult to collect, and thus war by whoever made, could only be carried on by small masses of troops, so that it was sufficient to protect each castle against surprise and a possible siege, by a small body of men. But it was also important to so arrange it, that the smallest possible number of men could defend it. How this was effected, we have seen in the consideration of the different little fortresses of Alsace and of the Palatinate. At a somewhat greater scale had conditions developed in France, where the Normans in particular, who had become masters of England, measured their forces with the French kings. Thus also greater works were necessary.

91. Castle Gaillard.

One of the most prominent and important of these was castle Gaillard built by Richard the Lionheart on the Seine, thoroughly treated by Viollet-le-Duc. We can indeed only follow him in the main lines; we must particularly omit here the peculiar situation and the description of the connection of the castle with a series of other strong places, and refer to the study of Viollet-le-Duc. We reproduce in Fig. 58 ¹⁰⁷ the plan of the castle.

Note 107. From Viollet-le-Duc. Vol. 3. p. 87.

It consists of two separate parts; the approximately hexagonal main castle and a triangular outer castle. At the foot of the hill the Seine forms a lake, whose entrance is barred by a small city located on an island, from which a bridge leads across the Seine, which is also made impassable at the

foot of the hill by several rows of piles driven at the base.
The piles are driven in the ground and are
the same. All the fortifications erected there in an attempt
to defend the hill from the sea.
Again like a wedge. Steeply rise the rocks from the sea,
and at their upper part are as steep, but on the west side
they pass down in a slightly sloping plain. The ridge of the
hill, on which stands the castle, continues to the southwest,
and the fortifications are built on the hill, and the
at the castle. The second part leads to its narrow rocky
ravines at the north end; no enemy could utilize this alone.
Through a ditch cut in the rock is the outer castle entrance
at the hill; another entrance from the main castle over
the ascending ditch toward the northwest side does not re-
sist. The arrangement recalls in a sense that of Saco (Fig. 3,
p. 28), where, likewise the western part is separated by the
ditch from the main castle. A. The difference results from the
closer consideration itself; for here the point A is turned
toward the sea, and the ditch is cut in the rock.
A round tower, A, B, C, D, E, F, G, H, I, J, K, L, M, N, O,
stands in the enclosure of the main castle opposite the rear
towers of the fortification; from them the walls extend obliquely
outward, still again round towers fortify the angles. This re-
sembles half of a hexagon toward the outer court of the castle.
In it was found a canal H, the well F, under it and out in
the rock was the cellar G. The outer wall was reinforced by the
ditch to be irregular. It forms only one enclosure around the
the rear court of the castle, which is enclosed by a wall
which at L a bridge leads to the gate K. On the side of the
ascends the hill, the numerous projections of the rock are
further defended by other fortified towers and walls T, so that
that they could not be assaulted by bold climbers. At a tower
V, which is reaching a well descending to the shore of the
river, that also joins the fortifications in the sea. The ma-
in castle is distinguished by its peculiar walled enclosure,
that they could oppose more resistance to projectiles, but the

foot of the hill by several rows of piles driven at the place, where the border lay between France and Normandy and crossed the Seine. All the fortifications erected there lie on Norman territory, and castle Gaillard itself cuts into the French domain like a wedge. Steeply rise the rocks from the Seine, and at their upper part are so steep, but on the west side they pass down in a slightly sloping plain. The ridge of the hill, on which stands the castle, continues to the southwest, and from thence also must the enemy approach, who would assail the castle. The access indeed leads to it through rocky ravines at the north angle; no enemy could utilize this alone. Through a ditch cut in the rock is the outer castle surrounded on all sides; another entrance from the main castle over the separating ditch toward the northwest side does not remain. The arrangement recalls in a sense that of Saona (Fig. 3, p. 28), where likewise the western part B is separated by the ditch from the main castle. A. The differences result from the closer consideration itself; for here the point A is turned toward the ridge of the hill, there to the valley.

This outer castle, besides the enclosing walls, consists of 5 round towers, A, B, B, D, D. Two such similar towers C, C stand in the enclosure of the main castle opposite the rear-towers of the triangle; from them the walls extend obliquely outward, till again round towers fortify the angles. This regular half of a hexagon forms the outer court E of the castle. In it was found a chapel H, the well F, under it and cut in the rock was the cellar G. The other half was required by the ground to be irregular. It forms only one enclosure around the inner court of the castle, which is enclosed by a wall elliptical in plan and a ditch I lying before the same, over which at L a bridge leads to the gate K. On the side of the Seine on the place, where the frontier line through the Seine ascends the hill, the separate projections of the rock are further defended by other fortified towers and walls T, so that they could not be ascended by bold climbers. At a tower V halfway up adjoins a wall descending to the shore of the river, that also joins the obstructions in the Seine. The main castle is distinguished by its peculiar walled enclosure, that consists of a row of closely set semicircular towers, so that they could oppose more resistance to projectiles, and at

the same time could also have been used for the fall-
 engine. The plan of the engine is as indicated, but not re-
 ally the same building is connected to it, but that it also
 has the same engine tower behind it, so that no engine, even
 if he had constructed near the tower and the engine, could
 come to attack the bridge and the gate K, so long as a
 also the tower as the rear was not taken, then tower a
 attack fort itself. Opposite the gate K stood then the engine
 keep K, whose defense could come with those of the gate
 structure. The building behind the keep contained the resist-
 ance. O is indicated a defensive tower located at the northwest
 beside which a small defensive tower faces out of the main
 court into the enclosure. In K and O is the proper entrance.
 However, excavation has been made of the construction of the
 castle, however, since and unchangeable is shown in con-
 temporaries, still it could not resist a long regular siege,
 such as after the death of Richard the Lionheart the French
 King Philip August besieged, and it was surrendered in the
 spring of 1204. No mention in the 12th a view, that Viol-
 let-le-Duc drew of this place, in which over the ditch of the
 outer castle was built with a gateway, then a bridge was
 built in the outer wall, and the tower at the point fell, on
 which the outer work was abandoned. In the lower story of
 the building K was destroyed, and out on several extensions;
 between them some passages passed into the interior of the
 building, so connecting into the inner court, and there only
 from, so that the wall between, in the belief that a mass
 number of Frenchmen had entered, fled to the inner castle. The
 the bridge K was left in excavating the ditch in the rock, on-
 ly being interrupted by a drawbridge next the castle. The draw-
 bridge then provided a machine on the fixed part of the bridge,
 under the protection of which they could no longer use the wall.
 The earthen ramp made a comfortable and drove out the horse-
 this means; but by this and construction was caused a weak-
 line of the wall, so that this fell under the great shock of
 stone, and the second tower against it. The French took it
 then to the keep. The castle was thus completely affected in
 the court. Philip August at once had it repaired. It is again
 not held out, was a very smallarrison was necessary to

the same time could offer more varied shot lines for the defenders. The plan of the bridge L is so arranged, that not merely the gate building K is opposed to it, but that it also has the round angle tower behind it, so that no enemy, even if he had penetrated into the forecourt and the enclosure, could dare to attack the bridge and the gate K, so long as a also the round tower in the rear was not taken, that formed a strong fort itself. Opposite the gate K stood then the great keep M, whose defenders could combine with those of the gate structure. The building behind the keep continued the resistance. O is further a defensive tower located at the northwest, beside which a small connecting portal leads out of the inner court into the enclosure. At R and S is the proper entrance.

However excellent was the design of the construction of this castle, however strong and unconquerable it seemed to contemporaries, still it could not resist a long regular siege, such as after the death of Richard the Lionheart the French king Philip August undertook, and it must surrender in the spring of 1204. We reproduce in Fig. 59 ¹⁰⁷ a view, that Viollet-le-Duc drew of this siege, in which over the ditch of the outer castle was first built a causeway, then a breach was made in the outer wall, and the tower at the point fell, on which the outer work must be abandoned. In the lower story of the building H were privies, that had an opening externally; through them some Frenchmen passed into the interior of the building, to penetrate into the inner court, and there apply fire, so that the small garrison, in the belief that a great number of Frenchmen had entered, fled to the inner castle. The bridge L was left in excavating the ditch in the rock, only being interrupted by a drawbridge next the castle. The French then brought a machine on the fixed part of the bridge, under the protection of which they began to undermine the wall. The garrison indeed made a countermine and drove out the hostile miners; but by mine and countermine was caused a weakening of the wall, so that this fell under the great blocks of stone, that the catapult threw against it. The French took the breach, and the little garrison no longer had time to retreat to the keep. The castle was thus conquered directly from the point. Philip August at once had it repaired. If it could not hold out, yet a very small garrison made necessary months

92. Castles of the 12th Century.

12th century and in the course of a single year, as reported, although it was large, still was right small for the proper needs of the life of the castle lord, and yet less were those of the garrison cared for. We may judge from this, that this could still less be the case in the little castles, and yet it was known here, that the castle could indeed remain an enemy, but that a small garrison was not even in connection to permanently resist an enemy. And there now developed at the courts of princes and of the greater vassals life in peace ever more varied, and it now greater requirements, and when

life in peace, there will occasionally be erected a palace and living room, that do not contribute to the greater strength of the structure, we must not wonder, that also in peace the claims of the comforts of life in the castles became ever greater, and more and more appeared in the foreground as opposed to mere fortress construction.

Castle of the 12th century was erected in the plain, in front the round wall at a great scale, an irregular polygonal enclosed by a wall beset by towers and surrounded by a ditch, at its middle extended a round tower, the enclosing wall, built monumental in a way, so that one can scarcely longer regard the fortification as the chief thing. It is a strong building, but no longer a castle.

Note 103. *Viertel-Jahrh. Vol. 3. p. 103.*

one plan and general view we reproduce in fig. 60, 61. The castle was built about 1225-1230 and forms the south of the little city, from which it is separated by a ditch. One of the castles, so that the city forms an outwork. When

of hard work for it, and if the garrison had not been too weak and perhaps too little attentive, the end would scarcely have been attained. ¹⁰³

92. Castles of the 12 th Century.

We see that this castle, that was built at the close of the 12 th century and in the course of a single year, as reported, although it was large, still was right small for the proper needs of the life of the castle lord, and yet less were those of the garrison cared for. We may judge from this, that this could still less be the case in the little castles, and yet it was shown here, that the castle could indeed restrain an enemy, but that a small garrison was not even in condition to permanently resist an enemy. But there now developed at the courts of princes and of the greater vassals life in peace ever more varied, and it set greater requirements, and when we must already see, that in Germany for the more pleasant life in peace, there will occasionally be erected a palace and living room, that do not contribute to the greater strength of the structure, we must not wonder, that also in France the claims of the comforts of life in the castles became ever greater, and more and more appeared in the foreground as opposed to mere fortress construction.

Castle Montargis, ¹⁰⁸ which in the 13 th century was erected in the plain, is first the mound built at a great scale, an irregular trapezoid enclosed by a wall beset by towers and surrounded by a ditch, at its middle standing a round tower; but an entire series of structures in the interior adjoined the enclosing wall, built monumental in a way, so that one can scarcely longer regard the fortification as the chief thing. It is a strong building, but no longer a castle.

Note 108. Viollet-le-Duc. Vol. 3. p. 103.

93. Castle at Coucy.

This condition goes yet farther in the castle at Coucy, whose plan and general view we reproduce in Figs. 60, 61. ¹⁰⁹

Note 109. From the same. p. 109.

The castle was built about 1225 -1230 and forms the angle of the little city, from which it is separated by a ditch, and toward which is turned the principal side of its fortifications, its walls however being attached to the fortifications of the castle, so that the city forms an outwork. men ap-

at the angle tower, so also on this was raised a row of
use must therefore be especially safe from the quarters. In
all the tower has but few window openings and also, the de-
fecting stairways, as well as certain little rooms. In de-
fecting stairways. In the thickness of the wall are found a
row of vaulted cells. The tower contains in each story a high
gate of the tower itself one passed over a bridge, that led
stairway E led to the defensive gallery of the wall. To the
and stairways of the outposts, but from which still a separate
and in the outer wall, that in connection with the cellars
as its foot passed around it. In the battery is found a pas-
ending around it, and like a cloak, a thick wall with batter
ty round tower B, at whose foot is also found a ditch V, exte-
as the last main fortress no main mass here with the ditch-
and entire external defense had ceased.

body of the enemy had succeeded in reaching the court, before
wished also to defend the buildings, if by surprise a stall
the exterior but also toward the castle court, so that man w
cellars could of the buildings were turned not only toward
eries could be placed. It is remarkable, that the defensive
series of bastions, on which similar outer defensive batti-
ment. The round towers have massive stone cellars before their
its floor an enemy as the foot could be more effectively fos-
gallery on projecting corbels, and through the openings in i
ers. But in particular all buildings bear a later defensive
at an enemy approaching the wall could be shot from these tow-
have shot-shaped openings for shooting in all stories, so as to
one first building was completed after them. But the towers B
the fortress secure, as we still find this at the tower, and
external walls were rapidly built as a certain height no more
only later. At the occasion itself at first raised only the
doubtless the buildings probably originated, partly indeed
they could be placed out of reach of the storming ladders; b
windows in the exterior, but indeed at a greater height, where
walls connect these towers. In their lower parts they have no
not as for example. The massive battlements with their external
and F, on the land side also allowing a half tower E to pass-
the four corners of the trapwork with massive towers C, D, G

appear to have thought the rock on which the castle stands to be held strongly enough, and were satisfied with turnishing the four corners of the trapezoid with massive towers C, D, S and T, on the long side also allowing a half tower L to project at the middle. Monumental buildings with thick external walls connect these towers. In their lower parts they have no windows in the exterior, but indeed at a greater height, where they could be placed out of reach of the storming ladders; doubtless the buildings gradually originated, partly indeed only later. At the erection itself at first indeed only the external walls were rapidly built to a certain height to make the fortress secure, as we still find this at the Louvre, whose first building was completed just then. But the towers have slot-shaped openings for shooting in all stories, so that an enemy approaching the wall could be shot from these towers. But in particular all buildings bear a later defensive gallery on projecting corbels, and through the openings in its floor an enemy at the foot could be more effectively fought. The round towers have massive stone corbels before their series of battlements, on which similar outer defensive galleries could be placed. It is remarkable, that the defensive galleries could of the buildings were turned not only toward the exterior but also toward the castle court, so that men wished also to defend the buildings, if by surprise a small body of the enemy had succeeded in reaching the court, before the entire external defense had ceased.

As the last main fortress we again meet here with the mighty round tower B, at whose foot is also found a ditch V' extending around it, and like a cloak, a thick wall with batter at its foot passing around it. In the batter is found a passage in the outer wall, that is in connection with the cellars and stairways of the building, but from which still a separate stairway Z led to the defensive gallery of the wall. To the gate of the tower itself one passed over a bridge, that led above the ditch V'. The tower contains in each story a high round vaulted hall. In the thickness of the wall are found winding stairways, as well as certain little rooms. In general the tower has but few window openings and slots, the defense must therefore be especially made from the platform. As at the angle towers, so also on this was arranged a row of

accorded to all appearance had two progressive stories over each other.

The interior of the building is partly constructed with east architectural elements, particularly those associated with the 12th; the chapel is a prominent piece of ornamentation on the contrary nothing is to be seen of important character, of a second enclosure and the like.

94. Castle of the 12th century.

were more decisive than around construction, and desired to not particularly reduce the character of the 12th, in order to preserve better the sense in a manner of order, it they were always directly noticed for it, i.e., they had a careful treatment and arrangement with regard to the 12th century. In general also the system of more interior activity was found not exclusively advantageous; for the south end of the earlier castles occasionally caused, that where no secure exit existed, men simply saw that in the castle as in a mousetrap, at the end of success was held by the enemy, and the gate was destroyed. A castle was made extremely difficult and his men with such a narrow front, that the assailants were in condition to enter, while the assailant had to descend his way there. Therefore also in Gency besides the strongly detached entrance to the castle, which led from the city to it, there was yet extended a passage, through which one could pass out of the ditch of the castle to the city wall and over the city ditch into the open country.

95. Castle of the 13th century.

In the case of the 13th century and first half of the 14th centuries, the power of the royal nobility is further manifested in favor of the royal authority. The great vassals and yet more the lesser ones were pleased, if they could retain their position in the kingdom, and were considered by the king.

For a building such as the castle of Gency, no vassal lordship the advances of military architecture appear, we therefore a

great corbels for placing a wooden defensive gallery, that according to all appearance had two projecting stories over each other.

The interior of the building is partly constructed with great architectural expense; particularly occur magnificent halls; the chapel is a prominent piece of ornamentation; on the contrary nothing is to be seen of important outworks, of a second enclosure and the like.

94. Castles of the 14 th Century.

Men experienced that the number and bravery of the defenders were more decisive than strong construction, and desired to not permanently reduce the comforts of life, in order to merely oppose better the enemy in a moment of danger, if they were always directly equipped for it, i.e., they had a careful commandant and trustworthy men, without utilizing also the greatest strength. In general also the system of mere inaccessibility was found not exclusively advantageous; for the strength of the earlier castles occasionally caused, that where no secret exit existed, men simply sat fast in the castle as in a mousetrap, if the road of access was held by the enemy, and the gate was besieged. A sortie was made extremely difficult, since through the narrow entrances the defender could send out his men with such a narrow front, that the assailants were in condition to enter, while the assailant had to deploy his men there. Therefore also in Coucy besides the strongly defended entrance to the castle, which led from the city to it, there was yet arranged a portal, through which one could pass out of the ditch of the keep through the city wall and over the city ditch into the open country.

95. Castle of the Louvre.

In the close of the 13 th and the first half of the 14 th centuries, the power of the feudal nobility in France diminished in favor of the royal authority. The great vassals and yet more the lesser ones were pleased, if they could retain their castles in defensive condition; extensive structures could only be considered by the kings.

For a building such as the castle of Coucy, no vassal longer had power and means. As the most important structure, on which the advances of military architecture appear, we therefore meet with the royal castle of the Louvre, ¹¹⁰ of which we give

a general view in Fig. 62. ¹¹¹ The castle has a rich history, that is also expressed in its plan.

Note 110. Viollet-le-Duc. Vol. 3. p. 122 - 140.

Note 111. From the same. p. 137.

As well known, nothing more of the mediaeval structure remains today; but old views, drawings and descriptions, excavations in the earth, etc., enable the French investigators to give a view thereof in a surprising way, that must scarcely be regarded as a hypothesis. Thus count Clarac already in 1826-1827 could draw accurate plans of the building, which Viollet-le-Duc has utilized.

The Louvre then lay outside the city, whose walls Philip August erected at the same time as this castle, that adjoined them. Certainly the Louvre had the problem of protecting the city against an enemy, who could ascend the Seine; but he must also dominate the city. Whatever outwork it then had is no longer to be determined; the east front toward the city, that later existed, must perhaps have already existed then, since it continued the city walls, even in an opposed sense. The square court with the round tower surrounded by a ditch is still retained here from the mound. As a centre and most important part of the whole was always regarded the middle tower; it was always the castle proper. There the vassals took the oath between the hands of the king; they bore their fiefs from the "Tower of the Louvre."

Wherein the building of the 13th century already differed from other castles, was in the plan of the gates, of which the Louvre had one in the middle of each of its four sides in opposition to the rule, that each castle should have but one gate. This was required by the peculiarity of the problem. Not only must the connection with the royal court be here possible on all sides, it could also be necessary to throw troops quickly out on all sides, and first of all the king must not sit in a mousetrap; if a vassal or the "faithful citizens of Paris," who must be kept in check by the castle, attacked to drive him back before the gate. The king was in position to keep a sufficient garrison; each of the four gates was a little castle, under command of a reliable commandant, and strong enough to resist an attack. Opposite each gate the assailant found the gate tower before him. The walls themselves were r

relatively low, so that one from the exterior could see over the wall. The wall was built with massive round towers and surrounded by a water moat. Little is known of the buildings in the interior of the court, and it appears that the castle in the 18th century had only a military importance, since the palace was converted into a residence on the island of the city, in which at least 5. Druis dwelt, served as the residence.

Excavations (1954 - 1955) revealed extensive buildings of the 12th century, and under his government he appears that the building was extensively outside the city, from which the city by the sea was an extension of the city, and have received the same name in our view, namely with walls surrounded in height, bearing which extended wings of the building, that were crowned with a low by defensive battlements. These wings of the building also had external window openings, while on the outside next the court were partly developed in rich and selected architectural. The drawing, observation appears to have been constructed by the side of the north wing toward the south, which was by a gateway tower, and was furnished with the same as a gallery and a covered approach, and from which a gallery was erected to connect this wing with the main tower. Toward the north side there were no openings before the wall. The date of this side was mostly closed. At the west were attached other and other royal buildings, that enclosed a great place, so that only two little towers marked the entrance to the bridge as toward the church. On the south side toward the bridge was a broad forecourt, the width to have an "archway" (Twine-bridge) in this was built a little castle before the bridge, which one must pass through, after also passing an outer wall, in order to pass out of the city. It is very interesting to see, how the outer wall, the outer side of the castle, toward the exterior from toward the city, while the city was located before it faced to the other side, but still in connection of the royal houses could also be used against the city. Along the bank of the river extended also a city wall with towers, that was enclosed an area, certainly not in con-

relatively low, so that one from the exterior could see over them the casting machines, which stood in the interior of the court, ¹¹² ready to receive every assailant. On the other hand, they were furnished with massive round towers and surrounded by a water moat. Little is known of the buildings in the interior of the court, and it appears, that the castle in the 13th century had only a military importance, since the palace that comprised the S. Chapelle on the island of the city, in which at least S. Louis dwelt, served as the residence.

Note 112. Is this assumption of Viollet-le-Duc correct?

Charles V (1364 - 1380) erected extensive buildings at the Louvre, and under his government it appears, that the building previously outside the city, first taken into the city by him as an extension of the city, must have received the form shown in our view, namely with walls increased in height, behind which extended wings of the building, that were crowned outside by defensive galleries. These wings of the building also had external window openings, while on the outside next the court they were partly developed in rich and splendid architecture. The greatest ornamentation appears to have been possessed by the side of the north wing toward the south, adjoined by a stairway tower, that was treated with the most magnificent and ornamental architecture, and from which a gallery was erected to connect this wing with the main tower. Toward the north side were no outworks before the moat. The gate at this side was mostly closed. At the west were attached military and other royal buildings, that enclosed a great place, so that only two little towers guarded the entrance to the bridge beyond the ditch. On the south side toward the Seine was a broad forecourt, too wide to term it an "enclosure" (Zwinger); in this was built a little castle before the bridge, which one must pass through, after also passing an outwork, that lay beside the city gate, in order to pass out of the city through the city gate into the interior. It is very interesting to see, how the outwork, the outer gate of the castle, turned its defensive front toward the city, while the city gate located beside it faced to the other side, but still in possession of the royal troops could also be used against the city. Along the bank of the Seine extended also a city wall with towers, that yet enclosed an area, certainly not in con-

connection with the castle, at whose lower side beyond the
 castle the line of the river of the view, that one must find
 traverse besides the outer enclosure dominated by the castle.
 it would pass through the gate into the interior of the
 city. But toward the city was directed not merely the front
 of the mentioned outer gate beside the city gate; further was
 found on the entire east side of the castle beyond the most
 also a well facade with towers, before which extended another
 wall, and that was strengthened in the middle by a little out-
 work, through which led the way from the city to the east gate
 of the castle. After it was taken into the city and was
 surrounded on the west and north sides by royal buildings and
 churches, the fortifications of the towers had only the purpose
 to protect the line, who found in it a comfortable residence
 not, against the city and its citizens, and to hold the city
 open to the castle, in the power of the king.

16. Castle of Vinsam.

of the castle at Vinsam (Fig. 63), 118 that lies in the 12-
 side and forms a rectangle of about 60 x 118 ft., and thus
 as one of the largest castles, only exceeded a little by the
 mentioned.

very low enclosing wall with a defensive gallery and surround-
 ed by a ditch, whose four angles are occupied by strongly re-
 ver side to further strengthened by three towers, each have
 the form of keep. The northern and southern ends have in the
 middle of each a large square, as well as the two end towers
 and the so strongly opposite, that one can speak of the
 extension of the plan for medieval buildings. The western
 tower side has a bay, not in the middle, but somewhat more
 to the south, in which is inserted through the great castle
 also an independent rectangular enclosure wall, at its middle
 having the square tower G with four small towers, which stands
 there as a fortress by itself and erected after the model of
 the old tower, completely separated from the enclosure wall.

connection with the castle, at whose lower side beyond the castle again lay a little castle with an outer gate, which falls far outside the lines of our view, that one must first traverse besides the outer enclosure dominated by the castle, if he would pass through the gate into the interior of the city. But toward the city was directed not merely the front of the mentioned outer gate beside the city gate; further was found on the entire east side of the castle beyond the moat also a wall facade with towers, before which extended another moat, and that was strengthened at the middle by a little outwork, through which led the way from the city to the east gate of the castle. After it was taken into the city and was surrounded on the west and north sides by royal buildings and gardens, the fortifications of the Louvre had only the purpose to protect the king, who found in it a comfortable residence, against the city and its citizens, and to hold the city, open to the castle, in the power of the king.

96. Castle at Vincennes.

With greater regularity than the plan of the Louvre is that of the castle at Vincennes (Fig. 63),¹¹³ that lies in the plain and forms a rectangle of about 656×1148 ft., and thus is one of the largest castles, only exceeded a little by the Marienburg.

Note 113. From Viollet-le-Duc. Vol. 1. p. 393.

As also originally at the Louvre, so is here only a relatively low enclosing wall with a defensive gallery and surrounded by a ditch, whose four angles are occupied by strongly projecting rectangular towers D, E, F and G. The easterly longer side is further strengthened by three towers, that have the form of keeps. The northern and southern ends have in the middle of each a gate structure, so that the two entrances A and B lie so accurately opposite, that one can speak of the exactness of the plan for mediaeval buildings. The western longer side has a gap, not in the middle, but somewhat more to the south, in which is inserted through the great castle ditch a rectangular ditch entirely enclosed by walls, surrounding an independent rectangular enclosing wall, at its middle rising the square keep C with four angle towers, which stands there as a fortress by itself and erected after the model of the old mound, completely separated from the enclosing wall

of the castle. The latter is nothing more, in which our opinion recognises the conception of the castle in general, than a great rectangular court dominated by the keep, and in which a series of buildings are found, placed at need here and there, indeed originally arranged also with a certain regularity, as the parts of our plan marked I still show, but gradually by the removal of some, additions and rebuilding of others, became entirely irregular in certain parts. One could just as well place a city in this enclosure. But the plan of the fortress is regular as scarcely a second, so regular that it can only be compared with a Roman camp, which was intended for a great army. The building is a work of Charles V. and thus belongs to the second half of the 14 th century, when the wars against the English compelled the king to form and maintain great armies, just as at the same time the Teutonic order proceeded, and for this purpose erected its Marienburg.

While the enclosure is so great, and doubtless also the original design was so regular, that the entire work has the most striking similarity to the city plans of the 13 th century, in spite of its two gates, it is not intended to carry the traffic of a citizen population dwelling in the interior. But it should still be not merely a strong point, that had only the garrison necessary for its maintenance; rather should it shelter such a one, that could also be opposed in the field to the attacking army of an enemy. But such an enemy consisted of soldiers, whose faithfulness was not always reliable. Therefore also the most complete isolation of the keep, in which if besieged by his own soldiers, the commandant must not regard it as impossible to dominate the camp as well as them. Such a castle was naturally an exception; it cannot be compared to the castles in which the feudal nobles sat, and which were always transformed more into comfortable dwellings.

97. Castle at Pierrefonds.

The further development for the residence castle meets us in Pierrefonds, begun in the first years of the 15 th century, which Louis of Orleans erected under the government of Charles VI, and that in spite of its strength, because the garrison was not supplied with necessities for being able to hold out in a siege, must surrender in 1420 to the English, as it already during its erection was compelled to yield to a siege by

transfer to the process of the King Charles VI in the year 1380
his brother. We recognize in this. 64 and 65 the plan and
a view of the castle from the north-east.

Note 115. *Vollet-Duc. Vol. 8. p. 66.*

This rises on the not very broad crest of a not very high
hill above the city, that extends at its foot on the west side.
The form has not entirely that peculiarly shown by the castles
of the Louvre and of Vincennes; but it still allows to be rec-
ognized that such regularly was situated for, so far as condi-
tions allowed. No no further and here enclosed walls, bastions
and from the first, that were strengthened by towers and inter-
rupted with defensive battlements. At the south extends before
the castle a rectangular court, which, however, is not complete-
ly produced on the plan, but is visible in our view taken
from south to north. An external wall encloses an area around
the entire plan. In evidence in the view, the entrance leads
to the castle at the southern end of the eastern enclosure;

one then passes across the entire enclosure, first in west-
ward and then the north and east sides, that the southern end
of the latter to pass through a gate situated near the north-
court. At A one passes by a bridge over the ditch, that leads
towards the tower from the castle, and in B enters the court.

This area lies between B and C and approximately square in
outline, which we may regard as a reminiscence of the form
of the former period, which does not have the nature of a four-
er, but that of a dwelling, and is terminated by the es-
planade at east and west. Toward the tower is situated a smaller
semicircular tower D, next the side of the court and a con-
siderable tower E, surrounded by a ditch; a stairway taken D which
element vestments and a flight of steps form the entrance
part of the building. The western wing D is the palace, a hall

and with capacity for defense in a very complete manner.

Note 115. *Vollet-Duc. Vol. 8. p. 66.*

We certainly shall not fail to remark, that when Vollet-Duc

details certainly cannot be proved as original, but which a -
will must be necessarily correct. Before all it is to be no-

transfer to the troops of the king Charles VI in the war with his brother. We reproduce in Figs. 64 and 65 ¹¹⁴ the plan and a view of the castel from Viollet-le-Duc.

Note 3. From Viollet-le-Duc. Vol. 3. p. 151, 157.

This rises on the not very broad crest of a not very high hill above the city, that extends at its foot on the west side. The form has not entirely that regularity shown by the castles of the Louvre and of Vincennes; but it still allows to be recognized that such regularity was striven for, so far as conditions allowed. We no longer see here enclosing walls, behind which were later added buildings, but structural wings arranged from the first, that were strengthened by towers and furnished with defensive galleries. At the south extends before the castle a rectangular court, which indeed is not completely reproduced on the plan, but is visible in our view taken from north to south. An external wall encloses an area around the entire plan. As evident in the view, the entrance leads to the castle at the southern end of the western enclosure; one then passes across the entire enclosure, first its western and then the north and east sides, near the southern end of the latter to pass through a gate building into the forecourt. At A one passes by a bridge over the ditch, that separates the forecourt from the castle, and at B enters the southern part of the castle court. On the right hand and beside this entrance lies between B and F an approximately square building, which we may regard as a reminiscence of the keep of the former period, which does not have the height of a tower, but that of a dwelling, and that is terminated by two gables at east and west. Toward the forecourt adjoins a higher semicircular tower G, next the side of the court being a square tower H, surrounded by a ditch; a stairway tower C with elegant vestibule and a flight of steps form the ornamental part of the building. The western wing D is the palace, a hall structure, whose interesting construction ¹¹⁵ combines occupancy with capacity for defense in a very complete manner.

Note 115. Viollet-le-Duc. Vol. 8. p. 86.

We certainly shall not fail to remark, that what Viollet-le-Duc gives are plans of restoration, ¹¹⁶ in which indeed many details certainly cannot be proved as original, but which still must be substantially correct. Before all it is to be no-

the top of the tower, from the south and across the building into a defensive position, which takes its way through the tower, with enough that men can move freely everywhere, project one on another, just as we found it at the first in some places, built 15 years earlier. As there, there also is a second

that three rows of windows could stand above each other. The palace extends at a right angle at the north a similar wing, to which is added at the east a narrow wing, which only extends to the middle, to the canal, which as a tower projects far from the base of the building. From the canal to the castle tower is only a stable wall beside the court, but at the north end of the other buildings, so that the defensive position is entirely around the whole area. At the south side between the castle tower, that again is covered by a triangular line of defense, and the source of the line to be taken the keep, lies in each story an entire row of windows, which in their extensive arrangement indicates, that a considerable garrison must have permanently remained in the castle in order to man the strong defensive apparatus. These soldiers may have lived in the towers. The hall structure and the resistance of the palace could be completely isolated from the defensive position, but with them they could be put into connection at any moment by opening the

Note 116. From the account, that the details of this castle living do not entirely agree with what he has given in Vol. 1 and 2.

Note 117. From Vol. 117-118. Vol. 1. p. 236.

98. Later Castle.

The history of this castle also shows, that even the most attempted, the fortress was surrendered in 1420 to the English, since the most necessary things were lacking. Therefore should it not allow their lives there to be endangered by fortifications?

Castle Grol again was built 100 years later on an island

noted, that no windows are on the exterior except those serving for defense, then that above and around the building extends a defensive gallery, which takes its way through the tower, wide enough that men can move freely everywhere, projecting on consoles, just as we found it at the Krak in some places, built 15 years earlier. As there, here also is a second defensive gallery above, that continues to project around the towers, that above still have two rows of fortifications. (Fig. 66).¹¹⁷ At the middle tower this system is again doubled, so that thus 5 rows of fighters could stand above each other. To the palace adjoins at a right angle at the north a similar wing, to which is added at the east obliquely a narrower wing, that only extends to the middle, to the chapel E, which as a tower projects far from the face of the building. From the chapel to the angle tower is only a single wall beside the court F, but arranged at the height of the other buildings, so that the defensive galleries go entirely around the whole plan. At the south side between the angle tower, that again is crowned by a fivefold line of defense, and the square building to be termed the keep, lies in each story an entire series of services, which in their extensive arrangement indicate, that a considerable garrison must have permanently remained in the castle in order to man the grand defensive arrangements. These soldiers may have lived in the towers. The hall structure and the residence of the rulers could be completely isolated from the defensive galleries, but with them they could be put into connection at any moment by opening the doors.

Note 116. Thus it occurs, that the details of this hall building do not entirely agree with what he has given in Vole. 1 and 3.

Note 117. From Viollet-le-Duc. Vol. 1. p. 386.

98. Later Castles.

The history of this castle also shows, that even the most excellent defensive measures were worthless, if they could not be utilized in the moment of danger. Without this being attempted, the fortress must surrender in 1420 to the English, since the most necessary things were lacking. Wherefore should men allow their lives there to be embittered by fortifications?

Castle Creil again was built 100 years later on an island

in the Oise, and therefore already has little more in common with a castle; on all sides are open wings of buildings opened by windows, between which are attached only an entrance tower with drawbridge and round towers at certain points, merely as still reminiscences of the strong castle. A projecting defensive gallery, that continues around the entire edges of the roofs of all wings, was always an important means of defense. If brave fellows in sufficient number stood behind, this residence equipped in this manner could pass as strong enough, and we shall return to similar plans in Chapter 10, that primarily must be habitable, and but incidentally had the problem of protecting the occupants in case of danger from a momentary attack.

THE CASTLE IN THE MIDDLE AGES

If we follow the development further, that had been com-
pleted in the castle architecture of Germany, we shall have only
in part the same representation as in France.
What made itself felt in great princely castles of Germany
already in the 12th century was the need of caring for great
comfort, and indeed in the succeeding period, just as in
France, the same tendency was observed. The same tendency
then in Germany great castles were also the exception, in the
13th century, smaller ones being the rule.
Where in one of the castles of the 12th century we found
in use a great and convenient palace, we had everywhere to
note, that this convenience was only to be obtained at the
cost of strength up to that time, where absolute inaccessibility
did not make the strength generally superfluous. But the
conception of strength also was changed. Where a great court
must be held in a castle, strength was not so important. In-
stead the soldiers of the king formed a living wall, that no m-
an could break through. In the 13th century the castle was no
long to withstand a regular attack. Where the master had an com-
mand a sufficient number of men, he did not need protection
in the castle, but desired to overcome the enemy in open com-
bat in the field, and compel him to retreat. Thus the strength-
to of the castle was only useful against sudden surprises. But
where a little castle occurred a knight, and a small garrison
must hold it fast, hence a castle life could not develop; the-
se we still find in a relatively late time, when the need of
greater comfort had long since appeared everywhere, and every
disatisfied man complained strongly of the little castles,
in which strength was exclusively determinative, while they
received only a small number of men experienced in war, who
were still little accustomed to the comforts of life. For the
defence, and then his attempts with few men to compel the
vassals to submission, continued until toward the close of
the 13th century.
As we have seen in the French castles, the improvements in-
troduced in the castles to increase the capacity for defence
of the castles were only of value, if a corresponding number

Chapter 10. Later German Castle Plans.

99. Castles of the 13 th Century.

If we follow the development further, that had been completed in the castle architecture of Germany, we shall have only in part the same representation as in France.

What made itself felt in great princely castles of Germany already in the 12 th century was the need of caring for greater comfort, and indeed in the succeeding period, just as in France, it ever became more pressing. But indeed certainly then in Germany great castles were also the exception, in the 13 th century, smaller ones being the rule.

Where in one of the castles of the 12 th century we found in use a pretty and convenient palace, we had everywhere to note, that this convenience was only to be attained at the cost of strength up to that time, where absolute inaccessibility did not make the strength generally superfluous. But the conception of strength also was changed. Where a great court must be held in a castle, strength was not so important. Either the soldiers of the guard formed a living wall, that no man dared to attack, or the fortress was in general not intended to withstand a regular siege. Where the master had at command a sufficient number of men, he did not seek protection in the castle, but desired to overpower the enemy in open combat in the field, and compel him to retreat. Thus the strength of the castle was only useful against sudden surprise. But where a little castle occupied a point, and a small garrison must hold it fast, there a court life could not develop; these we still find in a relatively late time, when the need of greater comfort had long since appeared everywhere, and every dissatisfied man complained strongly of the little castles, in which strength was exclusively determinative, which must receive only a small number of men experienced in war, who were still little accustomed to the comforts of life. For the small war, combats with neighbors, the revolt against the feudal lord, and then his attempts with few men to compel the vassals to submission, continued until toward the close of the 13 th century.

As we have seen in the French castles, the improvements introduced in the meantime to increase the capacity for defense of the castles were only of value, if a corresponding number

...as already the fact also in the Orient, that
each castle had a great number of men, which led to the im-
possibility of having it was possible to use the men correspond-
ingly. The dimension of power in Germany caused, that each of
the many little castles only had at disposal a very small num-
ber of men. There was no use in making doubled defensive pos-
itions over each other, of increasing the number of soldiers, a
few, when no men were there to occupy them. Therefore such a
consequence could not very easily be introduced into Germany.

The endeavor to most thoroughly utilize every advantage of-
fered by the location, to compensate for every weakness result-
ing from it, led to the irregular forms of our German castles.
As they were originally developed, when they experienced in the
12th century a momentary flourishing, and many new ones
were erected, that no more like the old, had to serve for the
defense of the entire country, but must only ensure the prop-
erty of the possessor.

100. Castle Hesselstein.

It in the measure we have said above, that men reasonably
located themselves at that time with theoretical studies, thus
indeed assumed that not thought of normal and regular plans.
About the close of the 12th and the beginning of the 13th cen-
turies, we therefore find in Germany also in the foundation of
castles of quite arbitrary and irregularity of plan, structures
in which nature appears overpowered. We find several of such
in Alsace, the classical land of castle building. Neither div-
er as the plan of castle Hesselstein (Wic. 67), 118 that of the re-
mains of castle Hesselstein are found at earlier time. It must
have been first erected by about 1200 von Rotenstein, to oc-
cupy the route between the Saône valley by Gernsheim to the A-
lps of Hohenfels.

Note 100. From Koeber, 1. Die Burgen in Elsass-Lothringen.

Wien 2. v. d. E. 91. 3. Strasbourg. 1886.

The masonry is constructed of corridors and fragments of the
primitive stone found there. It is an approximately square
court with rounded angles, that the castle shows us. The en-
trenchment is a tower O into an enclosure dominated by the tower
D. The principal tower F was round. It was faced with sand-
stone ashlar with bosses, which indeed indicates a somewhat

of men existed, as already the fact also in the Orient, that each castle had a great number of men, which led to the improvements by which it was possible to use the men correspondingly. The dispersion of power in Germany caused, that each of the many little castles only had at disposal a very small number of men. There was no use in making doubled defensive galleries over each other, of increasing the number of slots, etc., when no men were there to occupy them. Therefore such advances could but very slowly be introduced into Germany.

The endeavor to most thoroughly utilize every advantage offered by the location, to compensate for every weakness resulting from it, led to the irregular forms of our German castles, as they preferably developed, when they experienced in the 12th century a monumental rebuilding, and many new ones were erected, that no more like the old, had to serve for the defense of the entire country, but must only ensure the property of its possessor.

100. Castle Hugstein.

If in the meantime we have said above, that men zealously busied themselves at that time with theoretical studies, this indeed assumes that men thought of normal and regular plans. About the close of the 12 and the beginning of the 13th centuries, we therefore find in Germany also in the mountains castles of quite astonishing regularity of plan, structures in which nature appears overpowered. We find several of such in Alsace, the classical land of castle building. Naehrer gives the plan of castle Hugstein (Fig. 67),¹¹⁸ that by its regularity again recalls the mounds of earlier time. It must have been first erected by abbot Hugo von Rothenburg, to secure the route through the Laach valley by Gebweiler to the Abbey of Murbach.

Note 118. From Naehrer, J. Die Burgen in Elsass-Lothringen. Heft 2. p. 6, Pl. 3. Strassburg. 1886.

The masonry is constructed of boulders and fragments of the primitive stone found there. It is an approximately square court with rounded angles, that the castle shows us. The entrance is at the north corner, where a bridge leads over a ditch through a tower C into an enclosure dominated by the tower D. The principal tower F was round. It was faced with sandstone ashlar with bosses, which indeed indicates a somewhat

of the walls are indeed a sign that the Habsburg must go back into even the 12th century. The chief contrast to the early-er German round tower is this, that the round tower is dragged out into the enclosing wall itself, indeed that side is moved back, against which the attack must be made from the hill terrace. The outer wall of the enclosure on this side is placed quite near the interior, so that both walls could at the same time participate in the defense; likewise the angles of this enclosing wall are rounded off. A broad ditch extends around the plan on three sides, but on the fourth where the slope of the hill on its steep inclination would not allow a storm to be expected, the ditch is omitted; but on its three sides it

101. Castle Hohensalzburg.

Essentially farther than the Habsburg is castle Hohensalzburg, particularly striking by the regularity of the plan, certain parts of which still go back into the 12th century. The certain buildings of it fall in the 14th and 15th centuries, in part still later. The castle was destroyed in 1679.

(Fig. 68). 119

Note 119. From drawings placed at our disposal by provision of architect retired Winkler in Göttingen. -- Also see Koeber, 7. Die Burg in Salzburg-Lothringen. Ref. 2. p. 4, Pl. 2. Strassburg. 1884. Koeber however believes it necessary to assume, that the entire plan first belongs to the 14th and 15th centuries.

1722.

It consists of a regular rectangle enclosed by a wall 8.2 to 8.9 ft. thick with rounded angles, and that is 252.3 ft. long and 218.3 ft. wide. In an angle stands a structure on an elevation not unlike a mound, likewise a regular rectangle, from the middle of which rises the rectangular tower D. Adjoining this principal building at one end is arranged a lower rectangle 42.6 ft. wide and enclosed by thinner walls; one end of which contains the entrance. The inner court is not level, but contains several terraces of rock. At A is found the entrance, which first leads into the forecourt B and then into that at C, from thence down on the rock to the mound D, and into the inner court, where is arranged a covered cistern

earlier origin. Likewise the considerable thickness and height of the walls are indeed a sign that the Hugstein must go back into even the 12 th century. The chief contrast to the earlier German mound lies in this, that the round tower is displaced into the enclosing wall itself, indeed that side is moved back, against which the attack must be made from the hill terrace. The outer wall of the enclosure on this side is placed quite near the interior, so that both walls could at the same time participate in the defense; likewise the angles of this enclosing wall are rounded off. A broad ditch extends around the plan on three sides, but on the fourth where the slope of the hill by its steep inclination would not allow a storm to be expected, the ditch is omitted; but on its three sides it is further surrounded by a wall I.

101. Castle Hohenlandsberg.

Substantially larger than the Hugstein is castle Hohenlandsberg, particularly striking by the regularity of the plan, certain parts of which still go back into the 12 th century, while certain buildings of it fall in the 14 th and 15 th centuries, in part still later. The castle was destroyed in 1673; yet the ruins still permit the entire plan to be recognized. (Fig. 68). ¹¹⁹

Note 119. From drawings placed at our disposal by provincial architect retired Winkler in Solmer. -- Also see Moehrer, J. Die Burgen in Els.-Lothringen. Heft. 2. p. 4, Pl. 2. Strassburg. 1886. Moehrer however believes it necessary to assume, that the entire plan first belongs to the 14 th and 15 th centuries.

It consists of a regular rectangle enclosed by a wall 8.2 to 8.9. ft. thick with rounded angles, and that is 259.3 ft. long and 213.3 ft. wide. In an angle stands a structure on an elevation not unlike a mound, likewise a regular rectangle, from the middle of which rises the rectangular tower D. Adjoining this principal building at one end is arranged a lower rectangle 42.6 ft. wide and enclosed by thinner walls; one end of which contains the entrance. The inner court is not 1 level, but contains several terraces of rock. At A is found the entrance, which first leads into the forecourt B and then into that at C, from thence both on the rock to the mound D, and into the inner court, where is arranged a covered cistern

...and a wall is also found in the town itself, so that this
could hold out, even if the remainder of the castle was taken.
At F and G exist small exit passages. Besides the buildings
indicated in our plan may have existed several; for the castle
is its own wall, that could be better defended, the more
and it contained, than the more fellows that could find their
way in the buildings in the courts.

122. Castle of Landenberg.

To the largest castles of Alsace belongs the Landenberg or
a portion of the Giltburg hill, erected about the year 1200
by Count von Landenberg, in whose family the castle remained
until the French revolution. 123

...
Welt. 1. v. 28, Pl. 8. Strasbourg. 1880. -- Our illustrations

friendly manner by prominent architect retired G. Winkler in
Colmar, architect of the historical monuments of Alsace. An
attempt in the restoration unfortunately reached us, when the
block of our plan in Pl. 70 was already made.

By a ditch cut in the rock on the north side the hill termi-
nates at separated from the ridge of the hill (Pl. 67, 70).

It is so wide, that only the western part on which rises a
massive rocky peak higher than the eastern, which is occupied
by the castle. The northeast portion of the terrace is encl-
osed by a wall and forms a forecourt A, entered which the way

leads from A to the gate tower B, beside this turning toward
C and passing through the enclosure, leading at D into the in-
ner forecourt F, takes over a small terrace and over a flight

of steps to the higher side of the palace, that consisting of
two rectangular wings that have been more perfectly finished.
The walls are covered by the columns on the lower side, and o-
ver the little forecourt stands a wisely protecting bay.

...and completely separated from it rises the high tower G.
At H and I stood buildings, the lines of which the wall K L
with windows were detached, while in the plan, as the two
towers H and I move, since they also lie directly opposite
the ridge of the hill, was conceived as a main work for de-
fence. Also on the upper part of the tower are built in several
concrete, for which we assume that they extended around and

E; but a well is also found in the mound itself, so that this could hold out, even if the remainder of the castle was taken. At F and G exist small exit posterns. Besides the buildings indicated in our plan may have existed several; for the castle is merely a wall, that could be better defended, the more men it contained, thus the more fellows that could find shelter in the buildings in the courts.

102. Castle Landsberg.

To the largest castles of Alsace belongs the Landsberg on a projection of the Odilien hill, erected about the year 1200 by Gonrad von Landsberg, in whose family the castle remained until the French revolution.¹²⁰

Note 120. See Koehler, J. *Die Burgen in Elsass-Lothringen*. Heft. 1. p. 28, Pl. 8. Strassburg. 1886. -- Our illustrations are taken from drawings placed at our disposal in the most friendly manner by provincial architect retired G. Winkler in Colmar, architect of the historical monuments of Alsace. An attempt in its restoration unfortunately reached us, when the block of our view in Fig. 70 was already made.

By a ditch cut in the rock on the north side the hill terrace is separated from the ridge of the hill (Figs. 69, 70). It is so wide, that only the western part on which rises a separate rocky peak higher than the eastern, which is occupied by the castle. The northeast portion of the terrace is enclosed by a wall and forms a forecourt M, around which the way leads from A to the gate tower B, beside this turning toward C and passing through the enclosure, leading at D into the inner forecourt E, thus over a small terrace and over a flight of steps to the larger side of the palace, that consisting of two rectangular wings must have been made perfectly habitable, but still as proved by the corbels on its longer side, had over the little Romanesque choir a widely projecting bay¹²¹ for the defense of the entrance beneath this. Behind the palace and completely separated from it rises the high tower G. At H and J stood buildings, the first of which the wall K L with windows made defenseless, while in the plan, as the two towers K and L prove, since they also lie directly opposite the ridge of the hill, was conceived as a main work for defense. Also on the upper part of the tower are built in several consoles, for which we assume that they extended around and

the space between it and the palace, but when we saw, so near
a connection with the roof of the latter was possible, and a
has occurred in the hour of danger could rise into the tower,
and break down the bridge across them. The wall of the tower
and a likewise shows evidence of some place, so that it is
or is to continue. When we will therefore it on one attempt
at restoration to the. To, we must remark, that the southeast
part of the terrace could not remain open, but in some way a
must be enclosed, which we conceive to have occurred by a wo-
od wall.

Note 1st. Ninkler assumes in his attempt of restoration, that
that it was a projecting defensive gallery, which extended
horizontally around the entire base of the tower, whereby
the tower was rendered invulnerable to attack from
every character. He believes him to be in error, to state this
here expressly.

12. The tower.

Between the separated walls also stand in Germany, but
as we have before considered now in the description of the
tower, which towers as in the case of the tower. Such a
it is still found near the latter, but not far from the
one (No. 77), which is in the tower. It is a square, stone
one of the walls and is surrounded by a ditch. A defensive
on its date is indeed scarcely possible. If we further con-
ceive it connected with the latter, then this tower is just a
small round one, intended for a little bastion, and not
and the entire on a wall, so that the tower is not a
only, and to directly inform the bastion castle, to which al-
to the little bastion bastion, when it had reached the ver-
tically to the, and the bastion of the castle was not
necessary preparations. Such an advanced post could naturally
only fulfill the purpose, if it found itself in a place of a cas-
tle, or of several lying together and intended for continued
action. Then even a little bastion could temporarily stop a
road, and also serve as a point of attack.

supported a defensive gallery, while Winkler assumes here single bays. The access to the tower was found in the narrow little court between it and the palace, but high above, so that a connection with the roof of the latter was possible, and the occupants in the hour of danger could flee into the tower, and break down the bridge behind them. The wall of the forecourt E likewise shows consoles at some places, so that it is well to assume, that a projecting defensive gallery crossed it, which perhaps was first placed on the wall in the 14th or 15th centuries. When we still indicate it on our attempt at restoration in Fig. 70, we must remark, that the southeast part of the terrace could not remain open, but in some way must be enclosed, which we conceive to have occurred by a wooden enclosure.

Note 121. Winkler assumes in his attempt at restoration, that it was a projecting defensive gallery, which extended horizontally around the entire palace to the tower, whereby the general appearance would have naturally an entirely different character. We believe him to be in error, to state this here expressly.

103. Watch Towers.

Between the separated castles also stand in Germany, just as we have before considered such in the description of the Syrian castles, watch towers as intermediate posts. Such a one is still found near Wohlfahrtsweiler not far from Karlsruhe (Fig. 71), isolated in the forest. It is square, stands on a little hill and is surrounded by a ditch. A determination of its date is indeed scarcely possible. If we further conceive it equipped with palisades, then this tower is just a small mound¹²², intended for a little garrison, that had to guard the traffic on a road, to observe the approach of an enemy, and to quickly inform the nearest castle, to which also the little garrison retreated, when it had engaged the vanguard so long, that the garrison of the castle had made the necessary preparations. Such an advanced post could naturally only fulfil its problem, if it found itself in seach of a castle, or of several lying together and intended for combined action. Then even a little garrison could temporarily stop a road, that was alone entirely unable to hold it.

Note 122. Noeher, J. Die Umgebung der Residenzstadt Korler-

...etc. Götter, etc. Götter, etc. - According to our theory, ...
...such a tower is always a little castle, as which

Such regular plans, as we observed in Habsburg, ...
and Rosenburg, however always form the exceptions in the
mountains, where they can derive advantages from the shape of
the terrace and its surroundings. Therefore also in the 13th
century and later, most of the mountain castles and palaces
only the smaller ones, are not regularly arranged as before.

...
(Wiss. 72, 73), ¹²⁴ that indeed belongs first to the 13th or 14th
century.

Note 123. From the same.

Note 124. From Meyer, 3. Die Burgen in Elsass-Lothringen.
Heft 1. p. 25, Pl. 6. Strasbourg. 1886.

Standing on a protective hill, the rock surrounding it is a
...
...on the northern side the entrance A, towards which the
way leads to the north, turning again to the north to a gate
...
...which could be termed the palace, if the ruins
...
...the little garrison must first be collected. We do not see

many windows in the exterior; they may have opened on the in-
terior. ...
...that a protected defensive gallery existed and also a wooden
over window. When above this southern portion of the castle
...
...the northern wall with a pentagonal tower B, surrounded
by a wall C in the form of an irregular hexagon. The tower
itself turns its side toward the enemy, like that in the sur-
rounding of the court, i.e., toward the ridge of the hill, on which
he could build his casting machines. Meanwhile these casting
machines could not do serious injury to the tower or to the

...
...tower as well as the square one standing outside the enclosure

Karlsruhe, etc. Karlsruhe. 1884. --¹ According to our theory, that the conception of the castle appears in the fortified enclosure and not in the buildings standing within the fortifications, such a tower is always a little castle, of which it cannot be explained by what we state of it here.

Such regular plans, as we observed in Hugstein, Landsberg and Hohenlandsberg, however always form the exceptions in the mountains, where men can derive advantages from the shape of the terrace and its surroundings. Therefore also in the 13th century and later, most of the mountain castles and particularly the smaller ones, are not regularly arranged as before.

104. Castle Ortenberg.

We give as an example of such castle Ortenberg in Alsace, (Figs. 72, 73),¹²⁴ that indeed belongs first to the 13th century.

Note 123. From the same.

Note 124. From Moehrer, J. Die Burgen in Elsass-Lothringen. Heft 1. p. 25, Pl. 6. Strasburg. 1886.

Standing on a projecting hill, the rock supporting it is separated by an artificial excavation from the ridge of rock extending behind it. A transverse wall adjoining the rock contains on the northern side the entrance A, through which the way leads to the south, turning again to the north to a gate tower B, from this into a little court C, that lies before a building D, which could be termed the palace, if the ruins allowed the recognition, that it offered some comfort. Now the little garrison must first be contented. We do not see many windows in the exterior; they may have opened on the little court C. On the other hand the holes in the masonry show, that a projecting defensive gallery existed and also a wooden bay window. High above this southern portion of the castle rises the northern wall with a pentagonal tower F, surrounded by a wall G in the form of an irregular hexagon. The tower itself turns its edge toward the enemy, like that in the angle of the court, i.e., toward the ridge of the hill, on which he could build his casting machines. Meanwhile these casting machines could not do serious injury to the tower or to the wall enclosing it.

The two towers of the Trifels yet standing, the principal tower as well as the square one standing outside the enclosure

And if we have assumed such on the dwellings in our position in 1916. 37, this is only the subjective opinion, that such might have existed there, since indeed everything must fit out somewhere. Here on castle Orskov all parts exhibit slots, so that thus not merely from the castles and from the defensive batteries, but from nearly all points one could be sent against the assailants. Since by their position the walls would have hindered the archers, then recesses of considerable size are surrounded behind each of the slots.

105. Fortress Lankhron.

terraces at the east and west ridges and not to be seen in plan.

Note 106. Kober, J. Die Feste in Elbe-Donau. 1897

J. p. 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

The fortress stands on the middle of a ridge of rock on the top of a hill rising extending inwards, on which by great cuts in the rock is formed a ditch, from which arise larger and smaller rocky peaks left standing. The tower after a short distance in two levels. The route of access comes from A. While the entrance gives at B the ruins of a building in which we see a tower with a gate, and at C another gate, before which the of a bridge, over which led the way from the eastern corner. Martin gives a bridge at D without a gate, which however must have stood there; for the two half round towers C and D indicate still were only added at the close of the middle ages. In the inner court leads the road to the tower of the castle.

Stairway tower now occupies the way, which then leads up through it over the right of access to the doorway of the tower O, which still in the old manner lies high above the ground of the castle court. As the palace we must with Martin recognize the structure P. On the isolated rock at the west side yet stands a terrace Q, that indeed was connected by a bridge with the stairway tower situated the main tower C. In the

have yet no slots, to be regarded as openings for shooting, and if we have assumed such on the dwellings in our restoration in Fig. 37, this is only the subjective opinion, that such might have existed there, since indeed everything must first occur somewhere. Here on castle Ortenberg all parts exhibit slots, so that thus not merely from the battlements and from the defensive galleries, but from nearly all points arrows could be sent against the assailants. Since by their thickness the walls would have hindered the archers, then recesses of considerable size are arranged behind each of the slots.

105. Fortress Landskron.

Of the fortress Landskron in the Sundgau near Basel Merian ¹²⁵ gives a view, that we certainly cannot entirely harmonize with the sketch plan given from Naehrer in Fig. 74; ¹²⁶ for the terraces at the east and west sides are not to be seen in Merian.

Note 125. In Topographie Alsace, etc. (See Note 29, p. 36).

Note 126. Naehrer, J. Die Burgen in Els. ss-Lothringen. Heft 2. p. 11, Pl. 5. Strasbourg. 1886.

The fortress stands on the middle of a ridge of rock on the top of a hill ridge extending lengthwise, on which by great cuts in the rock is formed a ditch, from which rise larger and smaller rocky peaks left standing, the greater again being in two levels. The route of access comes from A. While then Naehrer gives at B the ruins of a building in which we see a tower with a gate, and at E another gate, before which stood a bridge, over which led the way from the eastern terrace, Merian gives a bridge at B without a gate, which however must have stood there; for the two half round towers C and D indeed still were only added at the close of the middle ages. Into the inner court leads the gate F under protection of the tower J, adjoined by a building wing H. Through K it then passed into the higher inner court L. A building M with a round stairway tower now occupies the way, which then leads up through it over the flight of steps N to the doorway of the tower O, which still in the old manner lies high above the ground of the castle court. As the palace we must with Naehrer recognize the structure P. On the isolated rock at the west side yet stands a terrace Q, that indeed was connected by a bridge with the stairway tower adjoining the main tower O. When Nae-

...in the 17th century, in fact the walls of the old castle
were raised there for a long time for attack, and for for-
tifying a small stone tower; yet doubtless the bastions would
have remained to assault the castle also from the west, and
therefore the tower 2 was of great importance, as in general
the architect took active consideration of the location, when
he placed the tower 1 at the east corner of the rock terrace
there like 2 against the western. But toward the south there
also appeared the outlook on the coast and led the way through
the outlook leading to the terrace at the foot of the rock,
in order to make the construction of the enemy more difficult,
if he decided to attack at the same time at both east and west
sides. It always remains striking, that the two parts of the
rock seem to have remained open so widely in favor of the ba-
stions at both sides, and the thought cannot be rejected, that
the outlook extended still further and enclosed the rock.
Of the construction of the castle, there are no detailed
statements; it must have been undertaken by the emperor Frederick
III in 1292, and probably in the first half of the 13th
century. In the 17th century, when progress in artillery
made a siege near by entirely superfluous, and there fore a
cannonade from the south side was very common, it was
at Alise. Meantime this could not defend itself against a
regular siege, and Frederick V of Bohemia therefore surrendered
the castle in 1624 for an indemnity to the French, who blew
it up.

100. Spessart.

That is only a small but interesting castle, of which we
give the plan in fig. 76 from a drawing by Winkler, as well
as in fig. 75 an attempt at restoration by him, the Spessart
near Andlau in Alsace.

Note 107. See Koeber, 3. The tower in Wiesse-Lothringen.

Heft 1. p. 20. 57. 3. Strasbourg. 1856.

It stands on the end of a projecting hill, that extends from
north to south, as a peak of the rock, that is partly detached
from the ridge of the hill by a ditch H. The ditch is mainly
very incomplete; for at I a part of the rock is left, evidence

Naeher designates the east side as the proper side of attack, this is so far correct, in that the ridge of the hill offers more space there for placing machines for attack, and for forming a small siege army; yet doubtless the besiegers would have attempted to assail the castle also from the west, and therefore the tower Q was of great importance, as in general the architect took entire consideration of the location, when he placed the tower I at the east opposite the rock terrace there like Q against the western. But toward the south the hill could be climbed, though slowly; therefore the architect also arranged the outwork on the south and led the way through the outwork leading to the terrace at the foot of the rock, in order to make the combination of the enemy more difficult, if he decided to attack at the same time at both east and west sides. It always remains striking, that the two parts of the rock seem to have remained open so simply in favor of the besiegers at both sides, and the thought cannot be rejected, that outworks extended still further and enclosed the rock.

Of the construction of the castle, there are no definite statements; it must have been undertaken by the emperor Frederic II in 1215, and probably is the first newly built after that time. In the 17th century, when progress in artillery made a siege near by entirely superfluous, and therefore a cannonade from the south side was here most probable, it received there also a crownwork, that the hostile artillery must silence. Meantime this could not defend itself against a regular siege, and Frederic V of Baden therefore surrendered the castle in 1664 for an indemnity to the French, who blew it up.

106. Spesburg.

That is only a small but interesting castle, of which we give the plan in Fig. 76 from a drawing by Winkler, as well as in Fig. 75 an attempt at restoration by him, the Spesburg¹²⁷ near Andlau in Alsace.

Note 127. See Naeher, J. Die Burgen in Elsass-Lothringen. Heft 1. p. 30. Pl. 8. Strassburg. 1886.

It stands on the end of a projecting hill, that extends from north to south, on a peak of the rock, that is partly detached from the ridge of the hill by a ditch H. The ditch is manifestly incomplete; for at I a part of the rock is left, evidence

of the fact, that as frequently the construction of certain
works continued so long, that was finally considered it no
longer worth the trouble to complete them. Toward the middle
i.e., thus toward the inclined side of the hill, is placed
the castle tower G and a massive battlement wall, that must have
belonged to the preceding period. Existing is the height of the
wall. To it adjoins the dwelling F with a lower height, which
perhaps in its nucleus is also older, but in any case
experienced a rebuilding in the second half of the 13th cen-
tury, by which the present character of the castle is deter-
mined. Whether Winkler's assumption be entirely conclusive,
that the building on this site had no visible roof, but desc-
ended toward the other side, we do not venture to decide; but
at least whether the row of battlements was calculated for
for a wooden defensive gallery, that was supported on corbels
or on prolonged beams. The wall is covered by windows, what a
rooms some connect to the rooms of the dwelling. The way of
access came from the northeast, then to the southeast led the
road a first forecourt A into a second B, at the sides of which
lay two chambers C and D, and then through a narrow pass-
age at E into the dwelling F. This external plan, of which I
little seems to be preserved now, must partially have first
been executed at the close of the 12th century. In this manner,
case from the beginning, palisades before the structure.

Note 129. From Winkler's drawing.

127. Castle Thurnau.

A prehistoric structure of small dimensions meets us in
the castle of Thurnau, that was erected on the bank of the
Rhine, on the slope of the hill below Niederwald and opposite
the House Tower and Binger, and that is known to all today
and visit the Niederwald monument, but also already since the
17th century has been frequently reproduced, and whose pre-
historic ruins in particular none of the illustrators of the
Rhine have omitted, so that the number of engravings, litho-
graphs and photographs of this ruin goes into the hundreds.
But in our knowledge no one besides von Söhlern has re-
ad of historical drawings. From the drawings which this honored
friend has left to us, from those drawings which the decess-

of the fact, that so frequently the construction of certain works continued so long, that men finally considered it no longer worth the trouble to complete them. Toward this ditch, i.e., thus toward the inclined ridge of the hill, is placed the castle tower G and a massive lofty wall, that must both belong to the preceding period. Striking is the height of this wall. To it adjoins the dwelling F with a lower height, which perhaps in its nucleus is also older, but in any case experienced a rebuilding in the second half of the 13 th century, by which the present character of the castle is determined. Whether Winkler's assumption be entirely conclusive, that the building on this side had no visible roof, but descended toward the other side, we do not venture to decide; just as little whether the row of battlements was calculated for a wooden defensive gallery, that was supported on corbels or on prolonged beams. The wall is opened by windows, that ensure some comfort to the rooms of the dwelling. The way of access came from the northeast, then in the southeast led through a first forecourt A into a second B, at the sides of which lay two others C and D, and then through a narrow passage at E into the dwelling F. This external plan, of which little seems to be preserved now, must partially have first been executed at the close of the middle ages. In like manner, but perhaps going down lower on the hill, there were in any case from the beginning, palisades before the structure. 128

Note 128. From Winkler's drawing.

107. Castle Ehrenfels.

A pretty castle structure of small dimensions meets us in the castle of Ehrenfels, that was erected on the bank of the Rhine, on the slope of the hill below Niederwald and opposite the Mouse Tower and Bingen, and that is known to all today who visit the Niederwald monument, but also already since the 17 th century has been frequently reproduced, and whose picturesque ruins in particular none of the illustrators of the Rhine have omitted, so that the number of engravings, lithographs and photographs of this ruin goes into the incredible. But in our knowledge no one besides von Cöhausen has published geometrical drawings. From the drawings which this honored friend has left to us, from those drawings which the deceased count Botho von Stolberg-Wernigerode made, and that are now

the all stations in western and in Eastern Germany's situation
the castle was built in the 14th century.

in the 14th century it no longer shows the form of the 14th
in century, but the rebuilding it suffered in the 14th and

in century.

Note 120. In the copy before us the first part bears the
the castle was built in the 14th century.

main eight castles of the most prominent cities, fortresses,
castles, etc. of the whole world. Wittenberg. Paul Thuret. 1897.

the castle was built in the 14th century. The castle was
the castle was built in the 14th century. The castle was

fortress is shown on Photo 10.

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found in the German National Museum at Nuremberg, as well as the illustrations in Merian and in Daniel Meissner's *Libellus novus politicus*,¹²⁹ we have composed the view that we present in Fig. 77. Certainly it no longer shows the form of the 13th century, but the rebuilding it suffered in the 14th and 15th centuries.

Note 129. In the copy before us the first part bears the title:-- *Scio-graphia cosmica*, i.e., New Emblematic Book, therein eight castles of the most prominent cities, fortresses, castles, etc. of the whole world. Nuremberg. Paul Fürst. 1637:-- the others:-- *Libellus Novus politicus Emblematicum civitatum*, pars altera 1638, tertia 1638, quarta 1638, etc. (Wherein our fortress is given on Plate 10.

Built in the year 1215, it then received its chief work, a massive wall with a defensive gallery, flanked by two towers, and before this being a rectangular court, that is surrounded by a high wall. This is the peculiar castle of the 13th century. The mountain wall behind the work was partly removed, so that the space behind it formed a ditch. From Rüdeshheim the way ascended to this ditch. Before the work was an area built in several terraces, whose upper portion adjoining the principal work was enclosed by a not entirely rectangular wall.

On the side next the Rhine, the inner castle for its entire breadth was occupied by a residence with two gables. Toward Rüdeshheim was later added the gate as an addition. On the same side from whence the road came, the wall of the upper terrace was extended, and the way into the castle ditch led between two little round towers, then through a gate building into the interior. In the outer angle between the principal building and the projecting structure were added buildings, that were partly constructed of wood in the upper stories, a appearing extraordinarily picturesque in the view in Meissner, yet having nothing to do with the construction of the fortification. Some houses stand behind the enclosure of the wall at the foot of the hill before the entrance to the castle.

Below the castle stood on the bank of the Rhine a strong custom house of the archbishop of Mentz, that was commanded by the castle, and must have been supported by it. The principal work of the castle will be described later.

The traces of all castles in the land is doubtless the
 Walsenburg in Prussia, whose entire plan is given in the
 scale (1:2000) on the adjacent plate, 130 at which all con-
 siderable are drawn. A slight rise on the shore of the Baltic
 received the highest part of the castle, that otherwise exten-
 ded along the bank of the river, surrounded by moats, that it
 formed its approach, since the water of Lake Walsenburg could be
 poured into them, and they were so wide, that even if part-
 ly dry at low water, yet finding them was made impossible by
 the narrow bottom. That a castle of the merely extent was con-
 sidered at once is evident, and we likewise find also from the
 names of "old" and "new" castle, that certain parts bear, the
 of they were not erected at the same time; meanwhile the ent-
 ire place again shows, that only little can have been added in
 the later time, that was not intended from the beginning. The
 circumstances of the castle goes back into the middle of the
 13th century; yet those buildings can scarcely come into con-
 sideration. The castle of the 14th century was the same as the
 one now existing of the old castle. Whether already then, and
 on the Walsenburg had already fallen in 1271, the idea already
 appeared, that the wars in the Holy Land were now coming
 to an end, that the order must now take the seat in Prussia,
 and that Walsenburg was the most suitable place for the cent-
 re of the order, that a new order would be erected with certainty,
 but its entirely proposed. But first in the year 1309, when the
 seat of the grand master, which was removed from Aachen to
 Bonn in 1308, the Walsenburg (see plate 130) was built
 plan erected to execution, to build here a castle of such ex-
 tent, that the main army of the order could be united at the
 seat of the grand master; then only for a great garrison con-
 siderable of such extent be necessary, not for the right-
 tics of the order united here. It must indeed be assumed, that
 it not in 1271, as for so many buildings of the order, was it
 erected of wood and earth as a defensive castle, but that al-
 ready from the actual construction of the existing main castle
 before, it certainly the order also first entered the site, on
 which it seemed to erect the castle, first by temporary works

108. Marienberg.

The greatest of all castles in the West is doubtless the M Marienberg in Prussia, whose entire plan is given at the same scale (1 : 2000) on the adjacent Plate, ¹³⁰ at which all other castles are drawn. A slight rise on the shore of the Nogat received the highest part of the castle, that otherwise extended along the bank of the river, surrounded by moats, that formed its strength, since the water of Lake Balauer could be admitted into them, and they were so wide, that even if partly dry at low water, yet wading them was made impossible by the swampy bottom. That a castle of the mighty extent was not built at once is evident, and we already find also from the names of "old" and "new" castle, that certain parts bear, that they were not erected at the same time; meanwhile the entire plan again shows, that only little can have been added in the later time, that was not intended from the beginning. The commencement of the castle goes back into the middle of the 13 th century; yet those buildings can scarcely come into consideration. First in 1276, when the city of Marienburg was founded, the castle of the order was also erected on the site now occupied by the old castle. Whether already then, since the Starkenberg had already fallen in 1271, the idea already appeared, that the wars in the Holy Land were now coming to an end, that the order must now take its seat in Prussia, and that Marienburg was the most suitable place for the centre of the order, indeed can scarcely be proved with certainty, but is entirely probable. But first in the year 1309, when the seat of the grand master, which was removed from Acre to Venice in 1292, was transferred from Venice here, could the plan proceed to execution, to build here a castle of such extent, that the main army of the order could be united at the seat of the grand master; then only for a great garrison could a castle of such extent be necessary, not for the dignitaries of the order united here. It must indeed be assumed, that not in 1276, as for so many buildings of the order, was it erected of wood and earth as a definite castle, but that already then the actual construction of the existing main castle began, if certainly the order also first ensured the site, on which it desired to erect its castle, first by temporary works for the permanence of the building.

Note 130. Castle Marienburg in Prussia. Represented by its finest external and internal views. Published by F. Frick. Berlin. 1799. 12 plates in aquatint. Drawings made by Gilly and Robe.

Historische und architektonische Erläuterungen der Prospekte des Schloss Marienburg in Preussen. Published by F. Frick. Berlin. 1802.

The castle consists of three main parts, that certainly in the year 1309 were so planned, as they are executed, but only gradually could they be completed, since the most important, the nucleus of the work, naturally came to execution first, the outer works being last. As the innermost part, as nucleus of the whole, appears the old or main castle (III of our plan). Before this and dominated by it extends a forecourt, that is surrounded by buildings; the new or middle castle II, before which is also a widely extending rectangular wall, that encloses a very extensive court I; the lower castle. In any case the main court must have been completed soon after 1309; for the church incontestably as it now appears was not contained in the original plan, and had received its eastern part Z during the thirties of the 14 th century.

Located on the bank of the Nogat, the castle had its main entrance from the side at A, where a bridge led over the Nogat, at whose opposite end lay an outwork, and the water gate opened, protected by two round towers. From the plan of this gate, as well as the fact, that the area along the shore was designated in old times as an enclosure, it comes that a wall was found at the bank, that allowed a defense of this front area. The elevated site of the bridge did not however permit a landing from boats at this place; therefore since men did not wish to prevent communication with the castle by water, a small portion of the shore was left outside the enclosure, and at B under the protection of a tower was constructed a second entrance to the area. Behind this tower B a bridge leads over the outer moat to the gate C, the armor gate and the Lorenz tower (so-called from the adjoining Lorenz church O), into the lower castle, i.e., into the great court surrounded by walls and towers. At the end of the wall around the front enclosure, where the outflow into the Nogat must occur; still stands a round tower, that indeed formerly stood entirely in

to the tower, was a building of considerable size, and which
 as it appears, was only built 100 years later (1412). Doubt-
 less in the wall of the tower enclosure other towers were
 it is indicated, or corresponding to the tower enclosure as a
 within the tower of the enclosed wall of the enclosure sta-
 as, we have indicated by dotted lines in our plan. 181. Likew-
 the the northern side of the castle court I no longer shows
 any towers, so that we have also indicated area by dotted lines.
 Note 181. In the plan the distance court is still greater.
 (181. 28, p. 125). The greatest circle court lies in the in-
 terior a series of certainly low buildings of different kinds,
 in which were indeed placed men and horses in great number as
 in a camp, buildings whose arrangement perhaps was entirely
 like a Roman camp, and that we can conceive erected as far as to
 be easily destroyed, for the camp consisted of soldiers, in
 cases they could not always be counted upon, and under
 some circumstances men had to fight, that the castle must be
 defended against them, so that not in their barracks should
 they find too strong a support, or their resort. Later may a
 certain building have been erected monumentally. With the
 original purpose of the castle ceased the old arrangement;
 buildings were and disappeared.
 The plan of the castle shows some towers to be seen, of which the
 one marked in our plan will do much to the position, and
 the those dotted and of lower origin. Opposite the tower also
 lies a second wall, the carved gate, likewise between two ad-
 jacent towers. From the existence we conclude, that the enclos-
 ure found at this site, of which it is known, that its outer
 walls and towers were first erected after the year of 1410.
 must have previously existed in a similar way; for the carved
 gate only leads into the enclosure. If it must provide for
 actual passage outside, then would not have constructed in
 by the enclosure. Whether the southern end of this enclosure
 already then took the form, that it had later, seems more for-
 an accident. Then added to the tower K, that must have exist-
 ed outside. A wall which incloses the enclosure extends ad-
 jacent the central enclosure; a second of another kind lies on
 the east and south sides before the enclosure in order to take
 the part as inaccessible as possible, so that the wall was on

in the water, the "leaning or buttermilk" tower T, but which as it appears, was only built 100 years later (1412). Doubtless in the wall of the front enclosure other towers were built or intended, as corresponding to the great distances at which the towers of the enclosing wall of the Marienburg stand, we have indicated by dotted lines in our plan.¹³¹ Likewise the northwest side of the castle court I no longer shows any towers, so that we have also indicated such by dotted lines.

Note 131. In Vincennes the distance apart is still greater. (Fig. 63, p. 120). This greatest castle court has in its interior a series of certainly low buildings of different kinds, in which were indeed placed men and horses in great number as in a camp, buildings whose arrangement perhaps was entirely like a Roman camp, and that we can conceive erected so as to be easily destroyed, for the army consisted of soldiers, whose fidelity could not always be counted upon, and under some circumstances men had to fear, that the castle must be defended against them, so that not in their barracks should they find too strong a support for their revolt. Later may certain buildings have been erected monumentally. With the original purpose of the castle ceased the old arrangement; buildings arose and disappeared.

The plan by Rabe allows some things to appear, of which those hatched in our plan still go back to the earlier time, but those dotted are of later origin. Opposite the armor gate lies a second gate, the carved gate, likewise between two square towers. From its existence we conclude, that the enclosure found at this side, of which it is known, that its outer walls and towers were first erected after the siege of 1410, must have previously existed in a similar way; for the carved gate only leads into this enclosure. If it must provide for actual passage outside, then would men not have obstructed it by the enclosure. Whether the southwest end of this enclosure already then took the form, that it had later, seems more than doubtful. Then indeed to the tower K, that must have existed, must have corresponded the tower L, as well as a second located outside. A wet ditch inside the enclosure extends around the entire structure; a second of unusual width lies on the east and north sides before the enclosure in order to make it just as inaccessible as possible, as the Nogai did this on

the northwest side. It bore the name of the master's carp pond. Perhaps we must assume before the problem, which this fortified camp had to fulfil, that the erection of the entire monumental wall of the lower castle was long delayed, and for a long time an earth wall with wooden enclosure remained standing, perhaps till the close of the 14th century, so that the construction of the front area after 1410 and that of the buttermilk tower in 1412, as proved by documents, were even merely the produced termination of the entire castle, planned after 1309 or even in 1276. This lower portion of the Marienburg has in regard to purpose and plan its parallel in the castle at Vincennes,¹³² that was also a strong camp for a great army at that time, which would be led into the field, as likewise the order in 1410 first went out to oppose the Poles in the battle near Tannenberg, and then after the first battle had to defend themselves in the fortress and to hold it. But in Vincennes the design is relatively small, so that it could be defended by a few men against the rather mutinous soldiers, since even there only dwelt a royal commander. Here was the chief commander himself, the grand master with all the officers and the entire order, who must find princely shelter in a work, that in case of soldiers housed in the lower camp of the castle thought of attacking it, it should be defended with a great number of men by the knights themselves. This purpose was served by the castle proper.

132. See Art. 96, p. 120.

Consisting of two parts, the middle or new castle II and the old or high castle III, it lies at the southwest angle of the entire structure, so that court $\bar{\gamma}$ continues around the east side of these main buildings, and a wet ditch in connection with the main moat encloses this castle inside the court. Over the ditch at the northeast corner a bridge D leads to a gate structure, and at E through the building into the court; an enclosure with towers enclosed the middle court on the northeast and southeast. The southwest angle projects into the ditch; there is the most ornamental portion, the grand master's residence, erected by Weirich von Kniprode (1351-1382), who extended and completed the work of Dietrich von Altenburg in this part. This will be fully treated later. On the northeast and southeast also protected by a separate enclosure, of

which we must also call attention to the tower at the south angle, the priest's tower, the middle castle is entirely open on the fourth side, and is separated from the high castle by a ditch, that indeed is now dry, but which placed between the others, in our opinion must originally have also been so deep, that it had water. Beside the grand master's residence a bridge leads over it to the gate F, from which the entrance led obliquely toward G into the inner court of the old or high castle III. This was made approximately square, and was surrounded by a second enclosure now interrupted by the church. Outside the enclosure the tower H stands in the ditch, and w which is connected with the upper story of the main building by a defensive gallery resting on arches. Similar towers occur here and there on buildings of the Teutonic order, and bear the name of "Danzger." Their model may be the tower of the fortress Starkenberg, although we have older similar ones in Germany as at Trifels. The appellation of "Danzger" is certainly first proved for buildings of the Prussian order.¹³³ T The plan of such a tower had the great value, that every out-work has, and by the connection with the main castle also the advantage, that on either side of it were sufficient men, and that these could easily retreat into the main building, after the tower had fallen. First of all the men in the defensive gallery could easily hinder the approach of an enemy on both sides of the main building by casting stones and arrows at t the enemy, particularly since the crossbow permitted a more certain and stronger shot. Therefore Kohler believes, that before Dietrich von Altenburg caused the church building to project from the high castle, the priest's tower by which our Danzger H lying diagonally opposite the angle of the high castle were also connected by an oblique defensive gallery like the latter, so that by it the two other sides of the high castle were also protected, an assumption which at least has grounds of suitability for itself, even if already the passage must be rather long, and also no proof is brought. If one must assume so many other hypotheses, certainly they must correspond to this of value. But our Danzger H also still has the problem to protect the arrangements made for water in the ditches of the high castle.

Note 133. According to Kohler (Vol. 3, p. 453) the name must

first have been derived from the "Hoch" tower erected at the

From the plan still partly preserved. Not at all clear as to the
the inflow of water to the castle; for the water must come
from the surrounding area, then the water could be kept in it
the most important cases, then flowing into the other ditches
when the small area to which it was restricted by dams was
filled and overflowed. An important of these ditches to be
filled with all circumstances require a line around the en-
closure of the high castle, which was enclosed by a wall built
in the ditch, on one side adjoining the prince's tower, then
the Dammshaus and on the other side the great master's resi-
dence, and it is not a few years with, yet at least sur-
rounds the entire high castle with water, at the other end
very dry. Not also when all ditches were filled by water from
the over this wall or by cleared ditches, this formed under
the surface of the water a very valuable observation to an
approach by canoe to the wall of the enclosure. The ridge of

which we have reached on our way, where there is every thing
and come as looking to us for determining how the water was
led into these numerous ditches. A second line of water
must have resulted, by the wall with towers also in connecti-
on with the Dammshaus, that encloses the castle against the city,
stood in the water, and joined at the bridge of the water gate
likewise existed a connection, so that if the water did not
suffice for all ditches, yet the third around the middle and
high castle could be filled, while only if the water could be filled
ed the ditches and the low castle and the only could be filled.
the city itself, the enclosure wall built after 1250, was
entirely open toward the castle, the direct connection only

one of the gates of the city under the name of the "Hoch" gate.
Waller also mentions a connection, that had on a bridge away
from the high castle to one of the towers, passed to the high-
trip tower, and across had into the city. Hans Kricheldorf
in 17, first in 1774 was constructed a corresponding entrance
direct from the city into the high castle. The city itself
formed at the south an outwork of the castle; under Waller
von Kricheldorf, it was extended by enclosing the new city south-

first have been derived from the "Stock" tower erected at Donzig in 1380, which stood before the high gate.

These are also still partly preserved. Not at all times could the inflow of water be the same; for low water must therefore be arrangements made, that the water could be kept in the most important places, then flowing into the other ditches when the small area to which it was restricted by dams was filled and overflowed. As innermost of these ditches to be filled under all circumstances appears a line around the enclosure of the high castle, which was enclosed by a wall built in the ditch, at one side adjoining the priest's tower, then the Danziger H and on the other side the grand master's residence, and if it was but a few yards wide, yet at least surrounded the entire high castle with water, if the other ditches were dry. But also when all ditches were filled by water flowing over this wall or by opened sluices, this formed under the surface of the water a very valuable obstruction to an approach by canoes to the wall of the enclosure. The plans of Rabe at our disposal show even only remains of these walls, which we have restored on our plan, where indeed every starting point is lacking to us for determining how the water was let into these innermost ditches. A second line of such dams must have resulted, by the wall with towers also in connection with the Danziger, that secured the castle against the city, stood in the water, and indeed at the bridge of the armor gate likewise existed a connection, so that if the water did not suffice for all ditches, yet the ditch around the middle and high castles could be filled, while only if the water sufficed the ditches and the low castle and the city could be filled. The city itself, its enclosure well fortified after 1280, was entirely open toward the castle; the direct connection only passed from the enclosure through the gate at D, that formed one of the gates of the city under the name of the "shoe" gate. Köhler also mentions a connection, that led on a bridge away from the high castle to one of the towers, passed to the Dietrich tower, and thence led into the city. Under king Frederic II, first in 1774 was constructed a corresponding entrance direct from the city into the high castle. The city itself formed at the south an outwork of the castle; under Weirich von Kniprode, it was extended by enclosing the new city sett-

settled before the gates, so that the entire combination of castle and city had an imposing extent at the beginning of the 15th century, at the time of the climax of the order. This highest period certainly did not last long. The battle at Grünwalde-Tannenberg broke the power of the order; his own unpaid soldiers in 1457 held the grand master a prisoner in the castle and gave him up to the Poles for a reward, in whose hands it also remained at the conclusion of peace in 1466. City and castle were in possession of the Poles, who long regarded it as their best fortress, until it fell to Prussia in 1772.

109. Carlstein.

When the emperor Charles IV in the years 1348-1357, leaving his capital, erected on the ridge of a hill a castle of considerable extent, as he did in his Carlstein (Fig. 78),¹³⁴ this did not have the purpose of protecting the country, nor even to hold it in subordination, but exclusively that of affording the emperor a secure residence, where withdrawn from the world, he could live exclusively for himself, indulging in the monotony of his reflections, but also could safely and properly at the same time preserve the treasures, that he had collected. That the castle should comprise a great garrison did not lie in the views of the builder; rather should it appear externally as an ornamental work and a casket of treasures.

Note 134. From Mitth. d. K. K. Cent. Comm. für Baudenkmal. Vol. 7. p. 75.

Extending from west to east, the castle was built on a crescent-shaped terrace, that attains its greatest height at the east; rugged and steeply falls the rock on all sides; through its foot at the northeast point is the road cut, which leads to the front entrance gate, the tower A, adjoined by a guard house C, while on the south side a wall with a tower goes high up the hill to the terrace D. In the enclosures the way now rises from A to a second gate tower B, adjoined by the buildings F and G. Passing through the latter one reaches the lowest castle court I, that includes the building H at the west, but at the east is a massive retaining wall, that encloses the second court II. This leads to the palace K, in which the emperor located his living apartments, adjoining it being at L living rooms for the monastic clergy, at M a stairway t

that connects together the different stories of the palace -- of which there are five. From this stairway also goes a bridge to the main tower N, which stands on the terrace III, only accessible by a flight of steps. The tower now has but three stories, the uppermost of which forms the chapel, from which the building is now designated as the collegiate Church of B. Mariae Virgin. In the story beneath the chapel are found living rooms; the walls are therefore opened by windows, just as in the chapel story itself; in these are formed the stairs. In the uppermost story is still found in one corner a chapel-like treasure chamber; in brief the walls are very much weakened, so that since the defensive platform and gallery are wanting, the building now no longer appears at all as the principal tower of the fortress.

The terrace IV rises yet higher than III; it is enclosed by walls with defensive galleries and four towers O, P, Q, R. T. The tower O, to which one ascends by means of a ramp from the court III, contains the entrance gate to this terrace, on which stands a second main tower S, to whose entrance, before which was formerly arranged a drawbridge, leads a flight of steps attached to the wall O P. This tower has on the terrace three vaulted, and over these two stories without vaults; above which was first found the defensive gallery, here quite reduced. The walls of this tower are even somewhat thicker than those of the first, but likewise already from below upward are opened by windows, so that thus the fortress character is greatly softened; also here are arranged stairs in the walls. The middle main story is the chapel of Holy Cross. The mass of the tower in its horizontal extent, the enclosure by walls and towers vividly recall similar buildings of the crusaders, and it is entirely probably, that the emperor intended such.

Our description of the plan of the castle we have yet to complete by a mention of the western end, where a wing V and a semicircular closed tower W stand, wherein was found the well, then by reference to the enclosure, that extends at a right angle along the southwest and southeast sides.

The plan exhibits as a special peculiarity the existence of two main towers N. and S, for which no reason as fortification is evident. If we examine these two towers of the castle

in place, we cannot escape this, that in each tower the chapel evidently forms the principal room, which also agrees with other castle towers, and since it was desired to have two such chapels, two towers were also erected. But that Charles needed two chapels proceeds from the abundance of treasures that he had to preserve, among which the relics and insignia of the Roman empire on the one hand and those of the kingdom of Bohemia on the other, formed two separate groups, each sufficiently prominent to form the treasure of its own chapel. If the emperor had for the service of the Maria chapel had formed a chapter, that consisted of a dean, 4 canons and 5 choristers, and at the same time had formed the purpose, that on the altar of Holy Cross chapel besides the dean of Carlstein, only bishops should read the mass, this also shows, what high esteem and what importance he attributed to these chapels.

What heretofore made Carlstein famous was the luxury, which prevailed in the splendid equipment, and that yet remains in certain chapels, particularly the Holy Cross chapel, to describe which will be our problem in another place. Also the costliness of the treatment of the chapels shows, that for them was erected the castle. It is interesting to find, that the oversight of the castle was given to a burgrave, and 20 soldiers composed the garrison, while 22 vassals of surrounding estates had to appear in case of danger for the defense of the castle.

Thus there was no great garrison, even if we assume, that when the emperor with his attendants was present, to which the defense of the castle was committed. They even had no military problem; they were there only to keep robbers from the treasures, that the castle enclosed.

On the details of the measures for defense we are not instructed; for the castle always remained habitable and so never needed what existed in defensive galleries, bays, etc., and thus in the course of time and finally even in our century were these gradually removed; even forms of roofs, that were by little peculiar, must give way, and only tradition knows what to say of them. Whoever has before his eyes, as I just at the time when the castle was erected, the Holy Grail and its castle Mons Salvatoris with its knights formed the ideal of knightly and social circles, will easily allow him-

himself to be convinced, that also Christians thought of the Grail, and would erect a similar church for his sanctuaries, (for the chief part of his treasures consisted of relics, and also in the imperial sanctuaries the relics were regarded as the chief part, and the regalia like the imperial crown, even acquired its sanctity in being preserved with the relics), and that should pass as a sanctuary together with its knights. Then we must assume, that also the exterior of the Carlstein was furnished with these galleries and turrets, and showed those bay windows and pointed roofs, which already the poets boast of for every castle. And if also to judge from the simplicity of the lower architecture, the effect depended only on the entire form, and that actually a sacred earnestness characterized this castle of relics, then can we think of the general appearance as not capricious. The view of the castle must remove every frivolous idea from one approaching; its sanctity must protect it more than the small garrison. In fact it would have been an injury to expose it with its splendors to the danger of a siege. It was an ideal castle, no war castle; so much the more is it also indeed an injury, that by unworthy treatment it has come down lower, than if it had been stormed a dozen times.

110. Castle Vayda-Hunyad.

A very ornamental castle in a different sense, but which also shows only, that the warlike importance of castles was already then reduced more and more, is the Castle Vayda-Hunyad in Siebenbürgen. Likewise this castle may have been already fortified in the earlier time, like many other later ones. Thus as it shows in the remains, it belongs to the close of the 14th and partly to the 15th century. We give in Fig. 79 the plan and add in the adjacent plate an elevation of the west side, from the drawings that the students of the Vienna Academy made under von Schmidt's direction, published in the plates of the "Bauhütte", where the elevation may also be regarded as an attempt at restoration. ¹³⁵

Note 135. From the illustrations of the "Wiener Bauhütte."

Corresponding to the form of the low hill terrace, that falls from south to north and then passes into the valley, various buildings are grouped about an irregular court, of which at once the palace or hall structure is the most important,

as appearing to us, on account of which the entire castle was erected, that otherwise is to be termed a court or festal castle. The palace stands in the middle of the enclosing buildings, whose most ornamental part forms its western facade; it is therefore similar to that of Pierrefonds (in contrast to those earlier ones of the 12th century, that stood defenceless in the castle, and for which therefore an inaccessible location is sought, free from storm), is desired for defense. North of the palace and not higher than it stands the entrance tower with bay windows, from which the tower could be defended from that over the entrance gate. Four round towers at different sides strengthen the enclosing wall, that is everywhere formed by the outer walls of the buildings, that lie on the separate terraces, particularly a larger one at the northeast angle. Among the structures is the interesting chapel. Unless the terraces are so regarded, there exist no outworks. Only at the south side, where the hill terrace is considerably higher, and where suitable space existed for the preparation of machines for attack, stands a strong square tower, separated by a cut in the rock, whose upper story projects on corbels and encloses the defensive platform. This tower is connected by a defensive passage with the castle itself, that passes over a high wall, that is partly supported by the ground rising behind it. If this defensive passage were not to be quickly taken by the enemy occupying the terrace, then at least an enclosure of palisades of considerable length was necessary. Only if one assumes this is it comprehensible, that in this retaining wall is arranged an opening, by which a connection of the upper terrace with the river becomes possible, which in case of a siege must only facilitate for the enemy the connection between its men operating on the east and west sides of the wall, even if the opening were dominated from the upper defensive passage and from the outer wall of the castle. For the defense it could only fulfil the same purpose, so long as the defenders could still act outside of the castle; while this was the case, it formed the connection of the sally port on the east side with the river valley, to which one could not pass from the main entrance, since the bridge lying before it led over the little river to the other side of the valley. Of the details of the defensive gallery

on the palace is especially interesting, as well on account of the practical use, since it is lighter as a corridor for the guests in the hall, than suited as a space for the defenders, as well as by the ornamental treatment, that is to be regarded as the chief thing; for on account of this man have evidently omitted to arrange slots as shot holes, and have built great windows, behind which the defense must stand as unprotected, as at slots not provided with battlements.

111. Castles of the 15 th Century.

Building, strengthening, destruction, restoration and rebuilding continually succeed each other in our castles in Germany. Each period retained of what originated previously; what it believed it could use, and added improvements that it was able to manage. Thus for most of the castles the appearance, in which they have come to us, is indeed extremely picturesque; yet it requires for most a critical analysis to determine to what time each part belongs, and careful consideration how such a castle was created at each of the different times, of which it contains details. We have already (Art. 41, p. 42) said, that each castle is individual, and therefore have omitted to establish too many general principles in castle architecture. We have preferred to place a series of such individuals before the eyes of the studious reader, who will recognize by their examination, how difficult it is to discover the definite rules that were employed, and how simple if one will entirely abstract them, how brief the formula must become in which one can express them. One can properly only say, that men constantly endeavored to study as thoroughly as possible the conditions of the separate case, and to do what resulted from the location itself. But always till the close of the 14 th century only existed the necessity to ensure against storm, that brought man to man, and where the besieger had to send a greater number of men into the field, than the besieged. The latter therefore desired from a safe place to injure the enemy on the march to the castle; he wished to make it impossible for the enemy to take a fixed stand in a suitable place in the vicinity, and to be able to develop his strategy. He desired to make it impossible for the enemy to be able to attack the entire enclosure of the castle on all sides at the same time with his superior army; even if the besieged had

not as many men at command, to be able also to defend the entire enclosure at the same time.

The means of attack possessed by the besieger indeed until this time were all calculated for acting in the vicinity. Also machines existed, by means of which the pesieger could cast great stones, beams, etc., to a considerable distance, but their use was difficult and the aim uncertain; the defender could easily from his elevated point destroy the machines of the besieger by similar ones, that he placed on his defensive platforms, when they were in condition to injure the castle materially. One can almost state, that it was more important for them to throw stinkpots into the castle, and thereby make stay therein difficult, or even impossible, than to cause the walls to fall by shots. For this the chief means always remained to undermine the walls, and we know that the Mohammedans attacked the castles of the crusaders by just great works of this kind. Where this was impossible on account of the high location on the rock, where the besieger could not succeed in coming on the wall of the castle by a movable wooden tower, where a weakness was nowhere to be found, the bold men could not be utilized to climb the rock and walls at a point not considered by the defender, and to be able to penetrate into the castle, then in spite of his superior men nothing remained to the besieger but to blockade the castle till treason, despondency or hunger opened the gates. Therefore we also see how carefully men avoided placing openings for windows in walls and towers, in order to not afford opportunity to the enemy to enter there by force or craft. One must see, that every window opening, that was not absolutely inaccessible, must be constantly watched by the defenders and occupied by men, if it should not give opportunity for a catastrophe.

In the little German rock-nests of the 12 th century it was always concerned, that they must be defended by very few men. Therefore first of all the inaccessibility of most sites was primarily the object, while these measures for defense stood only as second. When therefore for example, Viollet-le-Duc¹³⁶ shows what importance projecting towers have for the defense of a wall, and then makes assertions that the German castles before the 14 th and 15 th centuries did not have these at all, that thus their measures for defense were bad, they we

...by a single, while one of the first German castles would have been built, if there were no war to defend them? But also the attacking army, that could be sent in motion for the attack of such a castle, was so small, that two men or two women could also defend themselves without their towers.

...were not inferior to the French, that had only a different position. There is found among the French and English no element, which was not also known at the same time in Germany, and where it was necessary, also employed it. Yet then indeed knightly society was always in movement, the lord of a castle, who had not seen the world and sought adventure, was one who knew the castles of his neighbors better with those of his own, and at least at his own castle, or at the court of the nearest prince, had heard widely traveled knights and warriors speak of all nations, how castles appeared

...! If we trace the progress of the fortification of castles and wars in the West, we find that all of this resulted from the employment of great numbers of men for the defense. The condition of defensive castles, the slow in the construction of the castles, the different form of stone for the walls in the walls and towers, no longer to cast a ball of arrows on the enemy, all was possible only if men were there to occupy it

...men held it most appropriate for a long time, simply to remain in the old security of the house-tower.

A change in this first position, when with the building of the 15th century cannon and other such a development, that they could become seriously effective against the walls and towers of castles. The change in the construction of castles (Hesse) in the year 1499 shows, that in spite of the change of the cannon, not yet overcome, still a castle could be defended from some distance. The tower was still in use in the 15th century, as was the most effective tower and gun. For the castle themselves it was already a great step on the existence of such castles, whether it was possible to have not merely towers but also of castles behind the

...for, that by their effect it became impossible for an enemy

ask very simply, what one of the little German castles would have used such towers, if there were no men to defend them? But also the attacking army, that could be set in motion for the siege of such a castle, was so small, that two men of the garrison could also defend themselves without their towers. The castles thus in regard to their problem of defensibility were not inferior to the French, that had quite a different problem. There is found among the French and English no element, which men did not also know at the same time in Germany, and where it was necessary, also employed it. Yet then indeed knightly society was always in movement, the lord of a castle, who had not seen the world and sought adventure, who did not know the castles of foreigners together with those of his native land, who at least at his own castle, or at the court of the nearest prince, had heard widely traveled knights and wandering singers of all nations narrate, how castles appeared elsewhere, is indeed entirely inconceivable!

If we thus see what progress the fortification of castles had made in the East, we find that all of this resulted from the employment of great numbers of men for the defense. The doubled defensive galleries, the slots in the verticals of the battlements, the different rows of slots for shooting in the walls and towers, in order to cast a hail of arrows on the enemy, all had reason only if men were there to occupy them. But these were lacking in the German castles, and so men held it most appropriate for a long time, simply to remain in the old security of the mouse-trap.

A change in this first resulted, when with the beginning of the 15 th century cannon had taken such a development, that they could become seriously effective against the walls and towers of castles. The report on the destruction of castle Tannenberg (Hesse) in the year 1399 shows, that in spite of the clumsiness of the cannon, not yet overcome, still a castle could be destroyed from some distances. The farther we advance in the 15 th century, so much the more effective become the guns. For the castles themselves it was already a question of the existence of each castle, whether it was possible to have not merely muskets instead of crossbows behind the slots, but also cannon, that dominated the entire vicinity so far, that by their effect it became impossible for any enemy

to be able to plant his cannon so near the castle, that he could thereby hit and destroy its walls. Not every lord of a castle could manage this, and then already most of the castles must fall, unless the stopping of the guns of the besiegers if seriously effective, and that in the mountains effective guns were scarcely to be used, so that inaccessible castles could yet for a time dispense with guns for defense. But where in particular the cities in war against the nobility brought their great cannon before the castles, that were not similarly equipped, then the castles soon fell. What lord of a castle that only could, sought to secure himself by the possession and mounting of guns, so that he was in condition to prevent the erection of batteries in the vicinity of the castle, that might injure him.

Note 136. Viollet-le-Duc. Vol. 3. p. 105.

112. Hochkönigsburg.

We must for such a castle again select an example from Alsace, whose greatest and most famous, the Hochkönigsburg near Schlettstadt, we presented in plan in Fig. 80 to the reader.¹³⁷

Note 137. From Viollet-le-Duc. Vol. 3. p. 168 et seq. -- X Moehrer, J. Die Burgen in Elsass-Lothringen. Heft 1. p. 30, Pl. 9. Strassburg. 1886.

On the ridge of a hill sloping from east to west, that in the middle bears a high rock, rises the fortress. Originally indeed limited to the rock mentioned, there already in early time stood there a fortress, that was taken and destroyed in 1462, and in 1479 by emperor Frederic was transferred to counts Oswald and William von Thierstern, who immediately commenced rebuilding, for which they again used certain remains of the old building, so far as these appeared suitable. In the year 1633 the fortress was cannonaded by the Swedes, partly destroyed and burned.

On the west side from which it was most accessible, and from which the chief attack was to be expected, it is separated by a ditch from the rest of the ridge of the hill; then the entire terrace including this ditch is surrounded by a low enclosing wall with semicircular towers, which are still connected with an outwork T, that lies lower on the front ridge of the hill. At the southwest ascends the road to a gate A, from which branches to the right the way into the enclosure

and the outwork, reaching an external work, which is enclosed by two towers R and S like bastions. In this it rises to a second and higher gate B, passing through which and turning at C, it attains the famous lions' gate D, then past a building G by two gates into the wing I, that is open below toward the castle court K. On the highest point of the latter stands at H the old castle tower, adjoined by another building E. At M stands the great and remarkable constructed palace, to which is also joined a parallel structure. By a ditch N ¹³⁸ this part of the terrace is separated from the western outwork, that is terminated by two low round towers P and Q. These towers are of almost solid masonry and have in the interiors rooms like casemates, in which stand cannon, that could sweep the intended points. On the towers were platforms bearing guns, that could be directed toward all sides. They had the problem to make it impossible, that either on the western ridge of the hill, in the valleys at the south and north, or on the opposite heights cannon could be placed, to fire on the castle. In this problem they were aided by the two semicircular towers R and S of the east side, that lay substantially lower. The palace had a massive construction, that could resist cannon balls, and it bore a platform above, on which could also be placed guns. Also the outwork T should receive cannon behind its walls. The defensive galleries of the inner and outer walls extending around at different heights partly project as corbels, so that they were wide enough and offered a convenient passage, behind whose protection covered with wood, men with muskets and crossbows could stand. In the semicircular towers great calivers and small guns found places.

Note 138. This ditch indeed formerly was the western end of the earlier castle, that must have had its outworks at the east of S. and R.

But also at this fortress there must have been a garrison of considerable strength, about 500 men, for whom shelter must be required. Since this could not be the case in the inner castle, then indeed wooden buildings were erected in both outworks, and besides the towers had simple rooms, in which men could live.

The well served batteries around the castle on all sides must have protected it naturally; particularly they could be

extremely effective, where it was only the entrance to the
 tunnel that was visible from the outside. The tunnel was
 in the ground and was not visible from the outside.

Little is known.

11. Grosse Felskammer.

Grosse Felskammer is a large, flat as it is in the 66.
 (66. 75) with the addition of a plan, was subjected to a re-
 lation in the 18th century. It was assumed, that rock walls
 could resist the effect of cannon, then this was still in a
 very higher degree for a mass of rock. Just as the structure
 of Felskammer, whose horizontal section is given in fig. 85.
 and so was well worth while to increase it by battlements and
 to enlarge it. This occurred in the manner to be seen from

fig. 82. 129

Note 188. From the drawings of architectural architect refined
 Winter in color. -- Also see Winter, 3. Die Burg in Tübingen

Winter, 3. Die Burg in Tübingen

From the south side, where the rock and a narrow W. a
 retaining wall was added between the bastion towers D and W.
 and on the narrow passage was added a series of buildings;
 these were better for observation by the garrison, than the
 bastions and also in the rock, that appear in fig. 85. The most
 important of these are indicated by I, which are attached
 to the rock wall, from the lower passages and enclose
 the wall marked by 3 in fig. 85, and that receives a winding
 passage of considerable width. The other buildings stand ab-
 ove on the terrace of the rock. Among these is arranged the

bastion marked by 4 in fig. 85, which is attached to the rock
 wall and is the most important part of the fortification.

Attached to the bastion front of the rock, which defends the
 front of the rock, and which is attached to the same curve
 as the bastion. A lower court A with a ditch at the bot-
 tom is a small tower, at the south end a square bastion, con-
 nected with the bastion of the two walls. Between the two sta-
 nes a gate behind the ditch. A bastion arranged for cannon is
 also on the court front of the rock. The gate of the rock was stood

in the middle of the rock wall, and was the most important part of the fortification.

extremely effective, where it was only the entrances to the castle that required special defense, and so we see that to an active series of castles of the earlier time were added similar bastions.

113. Castle Fleckenstein.

Castle Fleckenstein in Alsace, that we treated in Art. 66, (p. 75) with the addition of a plan, was subjected to a rebuilding in the 15 th century. If one assumes, that thick walls could resist the effect of cannon, then this must avail in a yet higher degree for a mass of rock, that had the strength of Fleckenstein, whose horizontal section is given in Fig. 35, and so was well worth while to increase it by buildings and to enlarge it. This occurred in the manner to be seen from Fig. 82. 139

Note 139. From the drawings of provincial architect retired Winkler in Colmar. -- Also see Nocher, 3. Die Burgen in Elsass-Lothringen. Heft 1. p. 13, Pl. 1. Stensburg. 1886.

First at the south side, where the rock had a recess N, a retaining wall was added between two bastion towers L and M, then on the narrow terrace was placed a series of buildings, that served better for occupation by the garrison, than the chambers cut deep in the rock, that appear in Fig. 35. The most important of these are designated by I, which are attached to the rock wall, rise from the lower terrace and enclose the wall marked by S in Fig. 35, and that receives a winding stairway of considerable width. The other buildings stand above on the terrace of the rock. Among these is arranged the bastion marked P. Certain not monumental structures R, which have left their vestiges in different places, need no mention here. Indeed many of these may have also existed in other places. But of a certain importance is the partly doubled wall, placed before the north front of the rock, which defends the road of access, that indeed already followed the same curved ascent as still now. A lower court A with a ditch at the north is a round tower, at the south being a square bastion, connected with the higher of the two walls. Between the two stands a gate behind the ditch. A bastion arranged for cannon is also the square gate building Q. East of the same also stood a little tower D, which Winkler represents as rectangular in his drawing, yet in his attempt at restoration, that we repro-

reproduce in Fig. 81, it is shown as round. As Winkler assumes, the fortress may have appeared also in the beginning of the 16 th century, which on its rock will not merely pass as unacceptable, but just be regarded as a marvel.

Master Speckle indeed may have exaggerated, when in this theory of fortress construction ¹⁴⁰ for buildings on rocks he came to speak of those he had designed differently, first according to the shape of the rock, of which No. 7 has indeed become famous. It would be more than a conjecture to wish to decide that this Fig. should represent the Fleckenstein, and also that he says no word of that. But when Merian published his *Topographia Alsatie*, etc., and collected the material from all sides, it appeared to him then, that he had to present Speckle's ideal design as a representation of Fleckenstein; he had seen the fewest things himself, that he published, and gave it out in good faith as a view of Fleckenstein, and then in the imaginations of thousands and more, who had never seen it, Fleckenstein became the great wonder. Winkler has won real merit, in that he has made plans and views, ¹⁴¹ that show Fleckenstein as it is and was.

Note 140. *Architectura van Vestungen*. How they are built in our time in cities, castles and enclosures, on water, land, hill and valley. By Daniel Speckle, architect appointed by the city of Strasburg. Strasburg. 1589.

Note 141. Winkler has drawn a number of Alsatian castles and autographically reproduced them with attempts at restorations, yet unfortunately has only distributed them to friends, and has not allowed them to be published.

But also the impregnability was imaginary, and when the French came in 1674, they succeeded in surprising the fortress, and Monclar laid it in ashes.

114. Castles of the 16 th Century.

It now required greater means to furnish a castle with the necessary guns with artillerists and men, and even the result was the more doubtful, since also great armies were now formed, which marched before the castle with excellent siege artillery, fought to place it, sent balls against the walls and the defensive galleries, towers and bay windows, threw balls upwards from their mortars, which fell and broke through roofs and vaults, and thus the castle into which fire could easily

be cast, was so destroyed, that scarcely anything further remained for stormers to do, than to conquer the heaps of ruins.

How men by further definite works endeavored to give greater strength to the castles, falls outside the limits of our consideration.

Likewise the fortifying of cities must also pass through this transformation in the 16 th century. But if they could also obtain this, the castles could not. With the close of the 15 th century their importance had entirely come to an end, and still since even the knowledge of this fact did not so rapidly permeate all circles, men did not cease to prize and to fear the castles. Whether they were now enthroned above a city, whether in a forgotten corner of the mountains, they indeed still temporarily made more difficult the use of a road; they could yet compel a siege and destruction, so that the enemy was halted and required to transport heavy siege guns with the expenditure of force and means.

But to the rural nobility, to the possessors of the numerous little castles, could no longer accrue any benefit from this problem. For this purpose they no longer had any reason to build and to maintain such, to garrison them with men and to defend them. The close of the 15 th and the beginning of the 16 th centuries is the time in which the contest between the rural nobility, that meantime in the lack of other sources of help had become robber nobles, and the cities came to the decision, which had as a result the destruction of many a beautiful castle. But where the nobles were in friendship with their neighbors, and desired to live in peace with all the world, there the need became ever more pressing to live pleasantly in the castle, and while the poor noble sighed and complained of the dreary rooms, that this castle offered for living, the wealthy one expended his means in transforming the castle into the most comfortable residence possible. But both allowed the fortifications to fall into ruins; at most from custom and in remembrance they were occasionally still repaired, and a few men were retained therein, because it was once so arranged.

115. Castle Eltz.

Scarcely can be conceived a more beautiful example of such a castle made habitable at the end of the 15 th century, than

the extremely picturesque castle Eltz in the Moselle region and in the Eltz valley.

Note 142. Bock, F. Rheinlands Baudenkmale des Mittelalters. Series 3. Cologne and Neuss.

Enclosed by the little river of the same name on three sides, it lies on the not very high ridge of a hill, and encloses a court, on one of whose sides lie the buildings in a straight line, adjoining which at both ends the opposite series are arranged in crescent form. The southwest angle is formed by a tower of square plan, that still belongs to the close of the 12 th century, and at the time when the castle was fortified, dominated the entrance ¹⁴³ lying beside it, just like the tower at Friesach, with which it also has in common, that as shown by the different windows, already in the 12 th century must have had a rather comfortable residence in its upper rooms. It takes the name of Platt-Eltz, from which it has rightly been concluded, that indeed in earlier times its upper defensive platform surrounded by battlements indeed lacked the protection of a roof. It has several vaulted stories; but in a striking way a cornice seems to have been placed just beneath the platform. On our Fig. 83 ¹⁴⁴ it is visible with its accompanying stairway tower at the right hand of the observer, covered by a pointed roof and opened by windows, which show the forms of the close of the middle ages; for this tower was the proper possession of one of the lines of the house of the counts of Eltz.

Note 143. It is now placed at the opposite end.

Note 144. From Bock.

To a second line belonged the great buildings separated by a court from Platt-Eltz, that are visible farther left on our drawing, having 3 bay windows on the roof, and belonged to the family Eltz-Rübenach. This building also perhaps had an earlier predecessor, thus as it appears, it may have been built in the beginning of the 15 th century, rebuilt at its close; still it indeed has a defensive gallery at its upper part; but storming this would scarcely have presented any difficulties at the end of the 15 th century, even without artillery. But indeed according to the views of that time right comfortable rooms were in it, to whose pleasantness certainly the beautiful outlook did not least belong. We conjecture that a

already in the 12 th century the palace and kemnate stood here; for if to us also the building does not appear free from storming, yet it could indeed be protected by an enclosure, since always located at the best place, it would be first secure from direct attack.

The opposite crescent side in any case corresponds in its outer enclosing walls to the former line of the castle wall. We reproduce it in Fig. 84. It is externally already recognized as consisting of several parts. The three chief parts, taken from the right side of the observer, belonged to the family Eltz-Rodendorf, that again divided into several branches, of which Gross. and Klein-Rodendorf appear to have rebuilt their portion entirely new at the close of the 15 th century, as men even then also built dwellings in the city; story rising above story, opened by windows, yet without any attempt to take into account military architecture. For the uppermost story on the building at the right of the observer recalls only still a defensive gallery. The part left from the observer, Eltz-Kempenich, was first rebuilt after the middle ages.

Already the fact, that the castle was not combined in one hand, but lay in the hands of different owners, allows it to appear perceptible, that for the fortification, that still must have been made at the common cost, nothing more was done quite early, and that it disappeared with small remains. What may be seen of smaller external buildings on our drawing is in great part modern.

116. Joint Inheritance.

Here the owners of the castle at least belonged to one family, but this was not always the case. Joint inheritance (thus was termed the possession of portions of a castle) continued after generations had passed away since the division, no longer personally at all, and they were connected together only by the common rights and duties of joint ownership. Thus it came, that in the time of feud a joint heir "rejected" the nearest city and captured its merchants with goods on the road, so that the city was compelled to undertake a campaign against the castle, but in which all operations must be carefully limited to the portion of the castle belonging to the enemy, with which it lived in regularly declared feud. But had it stormed

the part of the castle belonging to its enemy, yet he could always escape through the portion of another joint heir.

So far as princes and nobles had retained castles in cities, they could also according to the condition of affairs change these into a peaceful palace or into a great army camp, or even into both combined. The palace at the close of the 15 th century was mostly small, and first the 16 th and 17 th centuries added spacious buildings to it.

117. Castle at Trient.

Thus we give in Fig. 85 ¹⁴⁵ the plan of the palace of the prince bishop of Trient, that lies on an eminence not far from the bank of the Etson at the east end of the city, was rebuilt at the close of the 15 th century, and was enlarged in the 16 th by special additions.

Note 145. From Mitt. d. K. K. Cent. Comm. f. Boud. Vol. 4, p. 101.

A ditch X cut in the rock runs behind the palace; the city wall I adjoins at both sides; the parts marked G are added to the palace. The oldest portion of it is the lofty projecting round tower C, adjoined by a tower B, next this again being a small trapezoidal court surrounded by porticos, with an oblique wing at its south side. This portion to the court D is executed in rich and decorative Venetian ornamental architecture, recalling the palaces of the city of lagoons; only the crowning battlements, which can no longer correspond to any practical importance, remind us, that it was formerly a strong castle, that stood here. But since also the former one was erected in this modest extent, the successor of the builder added the Renaissance palace A with the two wings E and F, connected with the old structure by the little wing at D. The part G of the wall, the tower of the eagle gate H, and the wall tower L were joined, and so originated one of the most charming residences, whose forecourt next the city indeed is still enclosed by a defensive wall M with semicircular bastion towers, so that it was still protected against any revolt, that might arise in the city.

118. Castle at Milan.

The beginning of the later military architecture characterizes the castle at Milan, of whose condition Viollet-le-Duc ¹⁴⁶ gives a clear idea, how it was erected at the close of the m

... was observed for a short period, but had no other-
... for a considerable time, but had no other-
... also the en-
... was placed on the ... and ... of the
... It was not consciously ... , and reason lies o-
... this, that again the ... must offer res-
... to the ... of ...

We have (Fig. 2) a ... consisting of ...
... which is ... by two ... towers, showing
... the middle of one and
... from it ... , ... the other appar-
... with ... this On ...
... of a ... and ... around these
... in a At the ... in a ...
... for a wall, and ...
... the opposite ...
... enclosed by
... stand separate trian-
... lead into ...

...
... all ...
... of the ...
... washed by water.
...
... the ... can be
... the The ...
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middle ages. Here was created the space for a great garrison, that did not provide for a comfortable life, but had to undertake exclusively military service, so that here also the entire emphasis was placed on the security and strength of the work. If this is not completely attained, that reason lies only in this, that again the walls and towers must offer resistance to the attack of artillery.

Note 146. Viollet-le-Duc. Vol. 1. p. 430.

We have (Fig. 86) a great rectangular court enclosed by walls D, which is fortified by two round angle towers, showing a square gate tower at the middle of one end. Behind this and separated from it lie two courts, which with the ditch separating them have the same width as this forecourt. On three sides and separated by a ditch a wall F extends around these two rear courts. At G the front wall extends in a triangle around the round tower, creating space for a wall, and then the wall also runs along the great court. On the opposite side at H is a small detached rectangular court, enclosed by towers. At both ends of the entire work stand separate triangular outworks C, through which the entrances lead into the castle.

A moat surrounds the whole, its water also enters all internal ditches, so that each court, every part of the enclosing wall, and each separate work forms an island washed by water. All walls are furnished with external embrasures, that are low and broad, so that on all sides at the same time can be maintained a well calculated fire of artillery. The square towers exhibit projecting defensive platforms, on which also artillery could be placed behind the battlements. The defensive galleries project and are wide, but are only intended for small guns. The round main towers, of which besides the two mentioned at the main court, there exist four others in the enclosing wall, have several rows of defenders, just as those previously mentioned at Pierrefonds. All parts are conveniently connected by bridges, although separated from each other by moats. The principal entrance is at I, where a doubled drawbridge exists; before this on the outer side of the moat is further a protecting wall, which first receives the shots of the besiegers, and are kept from the wall K enclosing the outwork C.

As the source for his representation Viollet-le-Duc gives a German copper engraving of the 16th century.

Chapter 10. The Castle Tower and Strong House.

119. Castle Towers.

We have already stated, that a main difference between the fortification of a city and a castle or monastery does not exist, that in both cases it proceeds about the same, namely with the greatest possible resistance to extend a wall, or several if necessary, around a number of buildings; such buildings were comprised in a city rather than in a castle, since the area to be enclosed was even greater. If then the different buildings standing within such a ring wall served similar purposes, they were also entirely similar in the city and in the castle. We have noted a strong tower ¹⁴⁷ in the earlier time in each castle, in which the master of the castle himself, i.e., his vassals found shelter, and had his dwelling, who with his men had to defend the castle, while these men built huts for themselves in the court of the castle. With the small comfort offered by such a castle, it may thenceforth be where it was only possible, that also the master of the castle preferred outside the tower, to which he retreated only in case of need, like his men to build an open unfortified dwelling for himself in the castle court, which in the largest castles of men of the highest rank was soon executed in stone, and as a palace as well as a ladies' building assumed a special architectural development.

Note 147. One may have thought, that for this tower, the donjon of the French and the keep of the English, should be introduced among us the German word "Bergfried" (hill piece), but that the ancients employed the name to designate other objects, but never assigned it to such a tower, so that justification of the use is wanting. We have therefore entirely avoided it.

Yet one would err, if he wished to believe, that this development of house architecture in the castle was in any chief thing essentially different from that, which house architecture passed through in any other place, particularly in the city, in the castle or in the monastery. We shall therefore first speak of the palace in one of the next books. But also in the city in these warlike times not everyone could believe, that he must equip himself only against external enemies of the city, only having to protect himself from such. On the contrary even in the city were hostilities; even in the city

were factions, and many must first think of defending their houses in the city, just as the master of the castle would not surrender, even if the wall of the castle had fallen, so long as his strong house, his tower still stood. Therefore we also find the like towers in the city in the earlier time, and later the same strong houses as in the castle.

Indeed there also occur cases in which the castle tower itself is built on such a large plan, that in the views of the time it could always present a convenient residence; this is preferably in England, also partly the case in France. In Germany the great castles belonged to the princes, who held court there, their living and festal room, that was arranged without any defenses, was so far developed, that the need never occurred at all, to also have a residence in the tower besides these. The strength of a court castle availed only against the subjects, at most to protect it from surprise. That a great army, which had already taken the city adjoining the castle of the prince, should be yet longer delayed by the latter, appears only possible in the earlier time. Later, already in the 12th century, the prince would not at all remain in a regular siege in his castle. Therefore we find in many great castles, that this principal tower is entirely omitted, as in Nuremberg, unless the later so-called "castle of the burgrave" with the still existing substructure of the pentagonal and the gate tower formed a structure like a donjon, and so in Brunswick, where it was probably replaced by the palace structure of Henry the Lion. But in smaller castles, that already existed in Germany in such great numbers, the possessor was not in the fortunate condition, to be able to make great requirements in regard to convenience in his strong house, in his tower. He was satisfied with the very simple, but therefore the so much stronger form of it, and he did what he could for his dwelling occupied by him, also certainly not always of stone, and in case he could have a considerable body of men around him, for a hall in the dwelling or a hall structure. Also no principles of fortification, other than in England, in Germany prevented the development of the tower into a keep; this rather depended on the different social position of the vassal.

120. Tower of the Wartburg.

The first question in the following examples of plans of
towers, we have considered from square and rectangular, con-

centric tower examples, then proceeding to elliptical, we
found that in some cases the tower, no matter how it was

designed, was not suitable, and in some cases it was
it is not difficult to find for each case the rate at which

the rate of the tower, which is usually the off-
set between the top of the tower, and not between the

center of the tower, and the center of the tower,
which is not the same, but the same, and the tower

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120. Tower of the Wartburg.

In the consideration of the different examples of plans of castles, we have sometimes found square and rectangular, sometimes round and octagonal plans of these main towers. If we had chosen fewer examples, then according to selection, we would have also come to the case, to regard one of these forms as the earliest, another as the later. However although it is indeed difficult to fix for each castle the date at which falls the building of its tower, which is mostly the oldest monumental structure of the same, and not always also rebuilt at a later reconstruction of the other works, but yet indeed we believe it necessary to state, that all the forms mentioned occur at the same time, and that only the personal preference of the master was decisive for one or the other form. Therefore we can select as an example of such a tower of the earlier time first the square southern tower of the Wartburg. (Fig. 87). (Art. 57, p. 62).

It is relatively small; its lower story is vaulted, also the second story, while the two highest stories have no vaults. As in all similar designs, the entrance does not lead into the ground story, but is found high above the ground in the second story, so that it was generally only attainable by means of a ladder, unless the person entering was drawn up by a rope lowered by those inside. The enemy could only take possession of the tower, if he succeeded in overpowering the high tower by storming ladders, but by which the entrance of several enemies at the same time was impossible, while the individuals entering could be easily overcome, if a couple of efficient men stood inside. One could only pass down into the ground story from inside the second story. Its only light was received through a slot high above in the vault; for ordinary windows at a corresponding height, the chief work of the enemy became correspondingly reduced, to overthrow the tower by breaking out a great hole and constantly enlarging it at the bottom, or by masses of combustible material thrown in and then fired, to cause it to crack. To make this labor more difficult was the purpose of the massiveness of the walls and the absence of windows. Furthermore the tower could only be taken, when a wooden and if possible a somewhat higher tower was shoved against it, from the platform of which the upper

defensive platform of the tower was reached, thence overpowering the defenders. How difficult this was is evident, as being scarcely conceivable.

The tower in the Wartburg still extends to the line A B, which was originally the defensive platform. In Fig. 87 we have drawn the buttresses and a projecting wooden defensive gallery. That the latter existed here, now fails naturally every starting point for us, and for the description of the defensive gallery, that nowhere exists now, and we can only infer it just as it is drawn on this tower, since even the most scrupulous critic cannot prove here, that it did not exist; for the tower might even have been a story higher. The slot windows found in the different stories are somewhat larger than usual; they were also enlarged indeed later. Through them could enter a not too large enemy.

We believe that we see in this tower a remainder of the oldest structure of the Wartburg. It is well known, that in the works of restoration a second tower, designated by the restorer as the proper keep was proved and again restored. The position of the existing one given here, so far at the most extreme point, indeed no longer corresponds to the plan of the ancient mound, whose tower stood at the middle. Meanwhile we find, that men soon transferred the tower from the middle to near the enclosing wall, in order that the first attack the defenders of the wall could be aided from the tower. But then we have also found in certain castles two such principal towers, when they stand at about the ends of a long terrace, and so it is not impossible, that the Wartburg also had two such towers.

121. Tower of the Fortress of Steinsberg.

One of the finest, because the most complete example of such a castle tower is formed by the octagonal tower of the fortress of Steinsberg near Sinsheim, faced with ashlar with bosses, of which we give in Figs. 88 to 93 four plans, an elevation and a section, that we have attempted to restore from the beautiful drawings published by the Society of Antiquaries of Baden. The building is properly attributed to the 12th century, and it thus gives us a very important example.

The ground story is square in the interior, while the tower is externally octagonal. It has a lient opening high up in it

the vault, and an opening below in the floor, that leads to a shaft, now indeed filled up, yet which tradition designates as leading to subterranean passages, so that we may have before us one of those secret connecting passages, of which we hear so much and know so little. Perhaps it was also a well shaft; for when the tower must afford a longer stay for a besieged garrison, it must indeed have water; but just from such a well shaft was it again easily possible to extend passages at different heights. Such subterranean rooms, even the ground story of the castle tower, are mostly traditionally reputed as oubliettes (for starving prisoners). In any case the ground story originally served as a cellar storeroom, that was of particular importance to the besieged defenders. Later when the original purpose of this tower had ceased, it may indeed have served as a dungeon. A. Schultz also sees in the ground stories "treasure chambers." This may be correct in princely castles; the ordinary German master of a castle needed no tower for his treasures.

The second story of the Steinsberg tower contained the entrance, and higher above it was a small opening for light. Two projecting corbels below and above the entrance show, that before it was built a wooden structure, which allowed while covered, the dropping of great stones down on the enemy, who came beneath the doorway and wished to raise ladders, to pour boiling water or pitch, and that in times of peace contained a windlass, that hoisted to the tower. The room in the second story is circular, and is covered by a horizontal vault, that has an opening at the centre, through which one could ascend a ladder into the third story. At a later time was constructed a second entrance, when a house was erected in the enclosure of the castle, that rose high above the wall, and from which in case of danger the master of the castle would go at once to the tower. The connection was made by a wooden bridge, that indeed remained permanently, but could also be quickly destroyed, if an enemy would attempt after reaching the court, to pass through the undefended residence into the tower. There now follows a story with a wooden ceiling and a small light opening, then a low story also with a wooden ceiling, but no opening for light, yet with a fireplace, whose flames sufficiently lighted the room, and which indeed was less intended

to work the little room, then to cook the food for the besie-
 half, to boil water and melt pitch, that were cast down on the
 besiegers. The room lying above it was also without windows
 and is covered by stone slabs, in the middle of which is again
 an opening, that both admitted some light and also permitted
 access to the tower, that corresponding to the 8 side
 of the tower, and battlements with 8 verticals and 8 openings.
 It is said that these battlements belong to a later restora-
 tion; but in any case the corbels are old, which are set below
 the battlements, and therefore indicate that a projecting roof-
 or construction was placed thereon. Such corbels may possibly
 have existed before the restoration, so that a projecting pas-
 sage around it may have been placed on them.

122. Projecting Battlements.

The importance of such projecting battlements for the defense
 will be mentioned immediately; still we shall not connect the
 its construction with the present example. On the contrary
 the stone defensive structure affords an opportunity to call
 attention, that there is a certain machine could be placed, thus
 was adapted to substantially replace an approaching enemy, who
 desired to establish himself there before the castle, or east-
 ward. They are placed always to not leave the
 place unprotected. A roof was placed over them, ab-
 solutely necessary with the stone construction, and could
 be removed, if a rebel or thief of the castle was to be
 sent. Then also were set on them the casting machines. Before it
 a wooden stage could not be made by a machine. Before it
 could connect, one always had time to prepare himself. What
 was ever to be taken was only a machine by hand's neighbors,
 was wanted to take the tower by a sudden storm; the con-
 struction could not be taken when. But in the case
 of a sudden effect of weathering also placed in one minute or
 the back space and the most difficult construction, the not re-
 main undisturbed. Therefore men usually preferred to set a pro-
 jecting roof to the tower. We must reject this projecting roof
 even for the 12th century as a nearly necessary structure;
 the men knew not how soon it must be removed. Only later, when
 an man had the defensive structure was used as a solid relief

to warm the little room, than to cook the food for the besieged, to boil water and melt pitch, that were cast down on the besiegers. The room lying above it was also without windows and is covered by stone slabs, in the middle of which is again an opening, that both admitted some light and also permitted ascent to the upper slab, that corresponding to the 8 sides of the tower, had battlements with 8 verticals and 8 openings. It is said that these battlements belong to a later restoration; but in any case the corbels are old, which are set below the battlements, and thereby indicate that a projecting wooden construction was placed thereon. Such corbels may possibly have existed before the restoration, so that a projecting passage around it may have been placed on them.

122. Protecting Roofs.

The importance of such projecting galleries for the defense will be mentioned immediately; still we shall not connect their consideration with the present example. On the contrary the stone defensive platform affords an opportunity to call attention, that there a casting machine could be placed, that was adapted to substantially injure an approaching enemy, who desired to establish himself fast before the castle, by casting great stones or other things. men knew how to make such slabs watertight. Yet they preferred always to not leave the slabs permanently uncovered. A roof was placed over them, that was not connected with the stone construction, and could easily be removed, if a regular siege of the castle was foreseen. Then also were set up first the casting machines. Such a regular siege could not be made by a surprise. Before it could commence, one always had time to prepare himself. What was ever to be feared was only a surprise by hostile neighbors, who desired to take the fortress by a sudden storm; the casting machines could not help against such. But indeed the continuing effect of weathering also produced in our climate on the best stone and the most careful construction, did not remain unnoticed. Therefore men usually preferred to add a protecting roof to the tower. We must regard this protecting roof even for the 12 th century as a merely temporary structure; for men knew not how soon it must be removed. Only later, when men saw that the defensive platform was used quite seldom uncovered, a more definite form was given to the temporary roof.

123. Tower of Castle Landseck.

Castle Landseck, that we have illustrated in Fig. 31 (p. 71), has its tower set against the enclosing wall, indeed just at the place, that was naturally weakest by nature, wherein art has thus combined all means of defense on the north side. We give this part of the castle in Fig. 96 enlarged from Fig. 31, and also add a plan and a section (Figs. 94, 95),¹⁴⁸ which permit us to recognize, that the tower is scarcely conceived as a proper living room. It exclusively serves the momentary purposes of defense of the most accessible side, and in a second way of the entrance gate.

Note 148. Attempt of restoration according to the drawings of Moehrer and von Cohausen. (See Note 72, p. 90).

It has in all three stories, the middle one of which contains its entrance. Corbels below this and holes¹⁴⁹ over it show, that a wooden bay could also be constructed here, just as at Steinsberg. Otherwise the interior of the tower was not connected with the other fortifications.¹⁵⁰ Stairs do not exist; thus also here through openings between the beams rope ladders formed the way into the ground story, and common ladders the ascent into the upper story and thence to the defensive platform. The tower was set directly against the wall; it even entered into this a little, so that this strengthened the lower story of the tower, and its defensive gallery passed directly along the exterior of the tower. The wall on this side also had a low outer wall; thus aside from the external wall of the enclosure, two rows of defenders stood at the foot of the tower, the third being on its defensive platform. We can conceive the defense of these walls only by projecting wooden defensive galleries, and therefore have had no hesitation to represent such on our illustrations. The tower is preserved for its entire height, thus the plan of the battlements is to be recognized; how these wooden defenses were fastened is indeed not evident. It would be conceivable, that they were arranged as in Fig. 94, and that the holes were later filled. But without such it was entirely impossible, with the thickness the battlements must have, to dominate from above the foot of the wall or the lower defensive galleries, while yet in a possible case the defense must be continued, even if the enemy had already possessed himself of the lower works.

Even if the approach to the lower works could not be hindered, if the enclosure were once in the possession of the enemy, which indeed was easily possible here. We have drawn in Fig. 94 the limiting lines from I and II, if crossbow men wished to hit as close as possible to the foot of the wall (archers could naturally not be included, except at III). If the enemy had crossed these lines, which with the small garrison and the slowness with which the straining and preparation of the crossbow occurred, was easily possible, then could he do what he pleased at the foot of the wall; no defender could harm him, unless projecting galleries existed from which he could be directly hit from above. Without such projecting galleries the tower was only in greater danger, if the walls were ascended, since it could be ascended more easily, than if it stood entirely free. We must also assume, that such a one existed here. Was here as everywhere, where every indication of such a necessary construction is lacking, the projecting defensive gallery a story higher, above the roof battlements and in connection with the roof, with bays here and there? ¹⁵¹ Thus also in contrast to Figs. 31 and 94, we have drawn in Fig. 96 this defensive gallery about a story higher, and as lying entirely above the battlements.

Note 149. Are these perhaps light openings?

Note 150. An opening C is new.

Note 151. See Chapter 14.

124. Tower of Castle Giblet.

What the buildings of the crusaders primarily brought into consideration is the extensive use of crossbows for defense, which produced a different construction of the battlements. We have spoken in Arts. 29 and 80 (p. 29, 97) of the city and castle of Giblet, whose fortifications were built by crusaders. We have also stated, that these must be surrendered to the Mohammedans in the year 1189; we have no ground for assuming, that they made these substantial alterations, since on the contrary they destroyed the castle. In a possible case certain changes were made in the 13th century. Therefore in spite of isolated occurrences of pointed arches, in which we may possibly see partial alterations of the 13th century, we can regard this tower as a work of the second half of the 12th century. On the ground of the drawings published by Rey, we

give in Figs. 97 to 99 ¹⁵³ the two plans and the longitudinal section of this tower. The same scale as the other plans and sections at once permits recognition, that it far surpasses the German in extent of plan, but is scarcely equal in height. Naturally in the East the tower was even a defensive work, that could be held by a corresponding garrison. This allowed an extent, which a German master of a castle could not have garrisoned with his men. There must be on the upper defensive platform alone about 40 men for merely manning the slots, and with the slowness in handling the crossbow, if a corresponding rain of arrows should occur, a corresponding exchange must exist, so that at each slot must be at least two men. If we add thereto the men required for assistance, the subordinate officers, we compute that equal losses must be taken in consideration, thus we regard a garrison of 100 men for this tower as certainly not taken too high. We shall then not be surprised, that the lower story at the springing of the vaults exhibits a row of holes which indicate that there was also a floor; for if we think that also entirely placed as in barracks, about 100 men had permanent quarters in the tower, then we do not envy the use of night quarters, since just in the East sleeping on the defensive platform could be conceived, three separate stories were constructed, one of which with the floor mentioned not belonging to the original construction but inserted therein later. Men chose just the lower story, since this had the least importance for the defense, because surrounded by the outer wall; for there is found in this ground story a slot only on the east side, through which if the outer wall were taken, a single enemy at the east side could be hit, who stopped just at the middle of the crown of the wall.

Note 153. From Rey. p. 119, 120.

Unlike the German, the tower is not a point of last retreat; it is also no residence tower, like the French; it is a barrack. It has its cistern in the cellar, in which the water collects, that was contained in the rock and earth around or fell thereon. As a barrack must the tower be accessible on the ground level, and have direct connection with the terrace of the court. If an enemy showed himself at the door, there were men enough to repulse him; therefore besides its heavy leaves it was not only furnished with a portcullis; a drawbridge would

have hindered its own men when closed on the enemy, and must be left free. Therefore no ditch and no bridge before the gate. These were the more superfluous, since just in Syria if a castle in general could no longer be held, it did not allow itself to be stormed, but surrendered under the most favorable conditions possible. Therefore men did not at all consider, that a very hard fight could arise about the doorway; they did not go so far with protection, that this might obstruct their own movements. Thus it was also necessary, that the men could ascend from the court upward as quickly as possible; hence the entrance to the stairway in the thickness of the wall was placed directly in the jamb of the doorway. The exit in the second story is first in the second niche in the north wall, the entrance to the defensive platform is again in the western niche. While the south side has three recesses with slots for shooting, two sufficed on the north side, since an opposite tower lay outside, then because the ascending stairs would be interrupted, if between these two niches had been placed a third.

The most interesting part is the defensive platform, where under the ordinary battlement construction, that served as well for archers as for stone-throwers, was still arranged a row of niches with slots, which were intended for crossbow men. Since the tower should only serve for the general defense of the castle, thus a projecting defensive gallery was superfluous for protecting its foot, and so the defensive platform, on which several casting machines could stand, remained without a protecting roof, as that climate required no roof.

125. Keep of the Castle at Arques.

An example of a great residence tower is given by the Norman castle at Arques near Dieppe, that is visible in the general view of the castle in Figs. 16, 17 (p. 55, 56), and of which we reproduce the plans of the four stories in Figs. 100 to 103.¹⁵⁴ The representations at the same scale at once allows the recognition of the ratio of magnitude to the tower of Steinsberg, as well as to the barrack tower of Giblest.

Note 154. From Viollet-le-Duc. Vol. 4. p. 33.

It first occurs, that also here not the same value is placed on inaccessibility, as in the German castle towers, where one did not have to do with permanent habitation. The keep stands

at the southern end of the castle directly by the tower B (Fig. 101). from which over the bridge A led the exit mentioned in Art. 53 (p. 55) to the ravine, that we have to regard as a sallyport or escape gate, and that lay entirely in the domain of the tower, yet watched by a post in the little room C. At M was an exit cut in the rock into the castle ditch and to the subterranean passage extending parallel to the same. At L is an entrance built later. The two rooms I on the ground level were originally not accessible from outside. At K is a well. What makes the plan so complex is the fact, that in none of the three stories, even in the third story, could one pass from one of two main rooms lying beside each other into the other; then must therefore be made two stairways. At D is one of the entrances to the third story, to which the stairway E leads; to reach J" must one use a hole in the floor of J'", from whence the stairway E leads out from the ground story, and from J" one first descends again into the room J lying beneath it. In the third story at both sides of the stairway E' at R a sufficient number of defenders could stand, who could attack from above an enemy, that had penetrated from D, and above the uppermost part of the stairway at Z were still holes in the floor for dropping, through which boiling water could be poured on the enemy. But also a second stairway led from the outside above F through G to a winding stairway I, from this under R to a stairway found in the wall, that ends at S in the third story; another stairway N led from deep below through the tower B and thence through P into the room J' of the second story, in the angle of which at Q was placed a winding stairway, by which one likewise passed to the room J" in the third story. Another stairway at T was in connection with that beneath, so that one could also pass downward through P' from J" by N.

The uppermost story, which had a single hall X, is entirely destroyed. Viollet-le-Duc and previously Deville have restored it from drawings of 1703. This story was only accessible by the winding stairway at O from the room V of the third story; one passed into the anteroom Y, and from the other side of the stairway to the defensive gallery c. From Y the way led into the great hall X, that was furnished with a fireplace f and a baking oven h. Through the doorway b were accessible

the holes a for droppings. A passage e leads to the face of the wall, so that one could also thence look down into the ditch and could see what occurred outside.

126. English Castle Towers.

In all English towers is found in the 12th century the lower stories divided into two rooms, just as carried out here, while the upper story contains a great hall, to which many of the castles give the name of "hall". Likewise the separated arrangement of stairways is similar to those existing in the tower, like the stairway E in Fig. 101. We refer to Clark's *Mediaeval Military Architecture in England* (London. 1884), where a series of examples¹⁵⁵ of such towers are found, but which partly by great windows already show from afar, that the possessor felt himself safe enough, and depended more on his own strength and that of his men, than on particular measures for defense. The latter preferably consisted in passages in the interiors of the walls, that were connected with the rooms by doors, and furnished with many slots outside for shooting. Through the latter entered light in sufficient measure, even where great windows had still been avoided. The rooms are conveniently connected, that is not merely by roundabout ways, as in Arques.

Note 155. Dover, Norham, Scarborough, Rochester, Porchester, White Tower in London, etc.

But it is still clear, that merely for the comfort of living very little advance had been made in such towers in spite of their considerable size; for if in Castle Steinsberg 10 to 12 men could hold it, as well as it could be held in general, and it must not be once lost, if by losses the number were yet reduced, then in Arques and in a tower as at Dover and Rochester, 100 men were necessary, if it were actually besieged all round, and must be defended. But there must not only be collected therein in the moment of danger; the master of the castle in time of peace must divide his dwelling with them.

127. Tower of Castle Trifels.

The few German towers for residence are therefore planned substantially smaller than the Norman, than that of Trifels, of which we reproduce here a section and 3 plans in Figs. 104 to 107,¹⁵⁶ with a reference to the view of the castle in Fig. 37 (p. 77).

Note 156. From Hoeber, J. Die Burgen der Rheinischer Pfalz. Pl. 2. Strosburg. 1887.

Indeed compelled by the location, this tower has in the ground story not merely an entrance, but also opposite this an exit, through another building into the court. The ground story consists of two vaulted rooms, that externally are furnished with little windows; from the same lead two stairways arranged in the inner wall up to the second story; one starts just from the jamb of the entrance doorway, as the case in the castle tower at Giblet, that we have just treated, so that a certain relationship with oriental buildings is not to be denied. One such also lies in the small extent in height; for if also on our general view (Fig. 37) the tower still appears stately by the substructure, which is properly merely a facing of the rock, yet it still has about the least height of the German castle towers.

Above the ground story is found an upper story, that consists of a richly constructed chapel in partly developed architectural forms, whose altar space is built out as a little choir, and an anteroom with a fireplace. This anteroom was connected with the adjoining rooms by a doorway. Likewise was found also in the upper story in a pretty little vaulted hall a connection with the attic of the palace. The tower is thus already attached to the residence in all its stories. The battlements indeed are wanting today; yet their former existence above the projecting cornice can yet be determined. As a thorough consideration gives, one can scarcely bring this tower into connection with proper castle towers; it has of them nothing more than the upper defensive platform, and is otherwise nothing but a dwelling, that by the defensive platform and its battlements is put in condition, to defend itself for a short time against a storming enemy. For the defense of the entire castle it was actually of importance only for the east side, and also cannot be regarded as the last refuge. For this was either of the external towers far more useful, particularly the well tower standing outside, in spite of its lower position.

128. Tower of Castle at Friesach.

Entirely allied to the tower of Trifels is that, likewise for the main part still well preserved, which stands in the

castle at Friesach, that in Fig. 44 occupies the middle of the view. (p. 37). We give here in Figs. 108, 109, two sections of it.

It has three stories below, that served as storerooms, above them in a high story being a pretty chapel, the uppermost being a living room with fireplace. The living hall has great windows; also the chapel has windows of such size, that if one ascended, he could easily pass through them. The walls no longer have that thickness as in the actual castle towers, in several stories was arranged a connection with the residence; a stairway was made conveniently accessible, so the entire tower also here as at Trifels is merely a part of the unfortified residence itself, certainly as at Trifels furnished with a defensive gallery enclosed by battlements, on which rose a high roof. Since the living hall is not vaulted, so that men thought in the erection of the tower scarcely more, than that the roof might be removed. We leave it to the honored readers to conceive for themselves a projecting defensive gallery, either outside the battlements or above them at the edge of the roof in Fig. 109.

It is evident that the tower was no longer strong enough to serve as a last refuge; as little as that in the Trifels would it have been able to hold out in a siege for but a brief time, as men assumed for the work at the time of its erection at the close of the 12th or perhaps only at the beginning of the 13th century. It could have been caused to fall quickly; but against a momentary surprise, even against an energetic storm it was indeed to be defended, and therefore had great value for the defense of the entrance to the palace and the inner court of the castle. If before this entrance were found a ditch with a drawbridge, and a storming enemy close to the northern longer wall of the tower must ascend rather steeply to the tower, this could be destroyed from the defensive platform; even the slots that lighted the lower story of the tower, if garrisoned by archers or spearmen, could cause difficulties for the assailants. If the men of the tower but approximately did their duty, every attack on the gate lying beside it could be repelled. But also for the general defense of the castle the form had its value, like that of the Trifels, the shooting from its defensive platform and defensive galleries,

if such were constructed with the high position, since they could cast downward crossbow bolts and arrows, even spears and stones, with tolerable safety along both longer sides of the castle on the approaching enemy, even when his upward shots must be entirely without effect, and even if the archers stood unprotected at the larger windows of the tower. But that men had recognized this fact, and made use of it with intelligence, results that on the south side of the tower on a level with the chapel floor was attached a defensive gallery, from which an enemy standing in the valley below and before the city gate could be most effectively struck. Thus this tower is in fact a very strong house.

It may yet be noted, that in the lowest story is found a shaft cut in the rock, that has not yet been examined, so it may possibly be a well. Meanwhile this appears to us little probable, since already the tower is not designed as a last resort, in which a garrison could hold out. We conjecture, that it is a way of escape, through which the inmates could fly, if they were not in condition to resist an invasion.

129. Towers in Cities.

Thus we see, that on the one hand by the palace designs, on the other by the weaker form of the castle tower comfort was increased in the castle, but the resistance was reduced against a regular siege, that also the strong house must offer shelter only against a sudden surprise or a rapidly developed storm. We find also a similar course of development in a series of city buildings. Both in Italy as in Germany were erected formal castles in the streets of the city. These towers, that we find as castle towers are mostly somewhat higher, indeed also arranged on smaller plans on account of the limited conditions of the ground, we find in the 11 th and 12 th centuries also in cities, just as defensive and even as strong against a siege, and even if most of these towers long since disappeared or were rebuilt, then Italian cities like Bologna, still offer sufficient examples, and even in Nuremberg at the entrance of Tetzels alley from Theresian St. (formerly Dilling alley) such a tower is still preserved, that not as one of the earlier enclosures of the city might have served as a wall tower, if already once the city wall passed just there, yet a tower of a city wall never had a similar proportion in height.

These towers partly stand by themselves, at most being enclosed by a wall like the mound, and also the before illustrated mounds of Rudesheim may have been nothing else than such castles built in the city, for Rudesheim indeed had several of these. They partly stand in connection with other buildings, that were formerly more or less strong. Upper Italy also still presents many such structures. Particularly in each older city the city hall was such a castle with a tower. The bishop's palace, house of the canons, the guild houses, the houses of wealthy families and many others were such castles.

In the 11 th century also these towers had their entrances at a height from the court, where they existed; they had only small slots for lighting and their defensive platform above. The courts were enclosed by walls with battlements and defensive galleries, and where buildings were visible above them, these were without windows next the street, furnished above with battlements and defensive galleries. But still less than in the separate castle was the need of defending them against a formal siege of long duration, and even more in the foreground was that of having pleasant and comfortable rooms.

The number of newly erected castle towers in the cities is right small from the second half of the 12 th century. We see in Italy, that with the close of the 12 th century a great number of castle-like city halls and other buildings receive those graceful ones with arched windows resting on slender columns, that are characteristic for the last years of the 12 and beginning of the 13 th centuries. But otherwise the houses retain all the defensive equipment, which can protect them against a surprise. Likewise in Germany were conditions entirely similar. Regensburg still has standing in its streets a considerable number of towers, which originally could have been only private fortifications, just as strong and windowless as such were in general. But with the 13 th century were they superfluous as fortresses, and arranged in one way or another, they received on their front one great window above another; they only remained unbroken below; for men did not desire, that every one on the street could enter the tower. Likewise their defensive platforms and battlements, bays and defensive galleries may have long remained in defensive condition, indeed till the close of the middle ages.

130. Niederburg at Rudesheim.

A transformation in such a sense may also have been experienced by the castle of the 12 th century by the Niederburg at Rudesheim, ¹⁵⁷ one of the earlier monumentally built mounds, that we have described in Art. 48 (p. 48).

Note 157. See Cohausen, A. von. Die Burgen von Rudesheim. *Zeit. d. Bauw.* 1886. -- Then in *Ann. d. Ver. f. Nass. Alt. u. Gesch.* Vol. 20. p. 11.

We certainly do not have the intention to attack our highly deserving friend von Cohausen, if we make known here our opinion somewhat differing from his own; we rather lament, that we cannot agree with him. But he assumes, that the rebuilding occurred at the end of the 11 th or beginning of the 12 th centuries. That men then knew the comfort of living, such as the Niederburg shows us, that then a castle of whatever kind was externally furnished with several rows of house windows, is absolutely not proved by any other example. Yet also the windows themselves exhibit the latest Romanesque forms. We reproduce in Fig. 110, anticipating a later chapter, from von Cohausen's drawings one of the double windows, that already doubtless belongs to the close of the Romanesque period, thus about the year 1200, not of a time 100 years earlier, whose hard strength is still in the fullest contrast to the play of mouldings, in which round and hollow pass into each other without forming an ogée. Without doubt the rebuilding occurred, when in the beginning of the 13 th century the Niederburg had lost its importance after the building of Ehrenfels and the rebuilding of the House Tower, and it had passed into the free possession of the lord of Rudesheim.

As there stated, it was originally surrounded by the water of the Rhine, and consisted of a not very high wall, approximately rectangular with a tower in one angle and with the entrance beside it. In our plan reproduced in Fig. 113 this entrance is marked A, and the tower with M. Since also the tower C also appears to be very old, then must the little court B have likewise originally existed, and its walls have had the same height as the entire outer wall, then scarcely half the existing one. A. von Cohausen assumes, that at the opposite corner near H a similar tower stood like M, the land since left vacant by the removal of the building existing there, a

which naturally cannot be contested, but also is not necessarily to be held as absolute, since W also may have alone existed, and the position at this angle may have a sufficient motive in the protection, which the tower directly offered to the entrance. According to von Lohausen's opinion, the principal tower G must originally have not existed at all, so that M was on the whole the castle tower. Yet if also the entire existing tower G must have been erected later than the adjacent buildings, then may we still not assume, that the mound did not have a principal tower inside, but it was limited to v. In any case G must have been added soon; for later, after the rebuilding to be mentioned now, would men have scarcely built it, if already the addition in the southeast angle to the adjacent buildings shown, that there a later rebuilding of the tower occurred. In the court of this mound may then have existed from earlier times some small structures of different kinds. But about at the close of the 12 th century the outer wall was raised and a series of buildings arranged around, that are vaulted throughout, and besides the cellar and ground stories still have two upper stories, so that only a little court remains in the middle, since the great tower G, projecting from an angle, almost entirely occupies it. Then we now believe that there could have stood the kitchen at H. with a great fireplace and flue. If we now also wish to assume as self-evident, that the openings, that the ground story now shows externally, all date from a later time, and besides the well defended entrances A B C, that also no other led into the interior, then the second story has everywhere small, but entirely sufficient window openings on all sides, each large enough for an enemy to enter by, if he set a ladder in a boat. Just such windows had the third story. It is no longer a castle; it is a comfortable open residence, which in the 13 th century was made of the Niederburg, so comfortable that even a lady (countess Ingelheim) has a permanent and right comfortable home in it, although the exterior is a ruin, without a any substantial alteration of the plan of the 13 th century.

If the castle was thus transformed into a residence, it was still a very strong house, that could quite easily be defended against any surprise, and for this it is also arranged in every detail. First it has above its defensive platform, that

extends over all wings and is only lacking over the entrance building. We have drawn in our section (Fig. 115) a roof on this defensive platform, since we believe, that such roofs were always arranged for protection. Meanwhile one is accustomed to see just this Niederburg without a roof, and whoever prefers castles without roofs may quietly conceal it in our drawing; for the platform does not need such; it already had no roof in Merian's time, and today is entirely watertight without one.

The defense of the entrance did not present particular difficulties; so far as a strong house could be defended, thus against a momentary surprise, sufficient security was afforded. Already the landing could be made difficult by dropped stones, spears and arrows from the defensive gallery, as well as by the men found in the gate hall, and from the tower in the corner, and since indeed the boats could only come singly and land their men,¹⁵⁹ then the men in the narrow rooms at the gate never had to do with an essentially superior enemy. The little room B stood always under the protection of the defenders high above and placed on four sides. Thus it could not be particularly difficult to close the gate C at the right time, which opened outward,¹⁶⁰ or if the enemy could powerfully hold it open, to defend it so long as but a few men could support each other at the gate, and could relieve each other if necessary, since they had only one enemy before them, but the assailants were also strongly attacked from above. But also nevertheless, if the assailants had taken the gate, they found themselves in the court, that could be hit by the defenders from all sides, who stood on the defensive platform or behind the battlements. The court is small; if about 30 men had penetrated there, they filled it completely, hindered each other in every act, must send their arrows and stones almost vertically upward with quite feeble and also poor aim, right few could reach those on the defensive platform, while each of the spears thrown down, every arrow and stone must hit. Thus the enemy must try to pass upward as quickly as possible.

Note 159. Nothing is to be seen of any bridge. If indeed a such existed, it was narrow and in any case the part directly before the door was arranged for removal.

Note 160. A portcullis seems to have not existed, unless it

was found at the inner side of the little court, and was operated from the upper defensive gallery.

This intention was opposed by the arrangement of the stairs. To the second story (Fig. 114) lead three of those at D, E and F; each leads up to a little lobby, from which a storming enemy would find it hard to make his way upward. But if he did arise, on the right and left were doors, into which the defenders could escape and close behind them; in the wall behind them were beams, that could be drawn out, so that these doors were barricaded fast. But then the assailants must already possess great local knowledge in order to know whether to attack the door on the right or the left; for example, if at the stairs D he forced the door at his left hand, he found himself in the room N, from which he could go no farther, in which he might possibly be shut and captured by the defenders, while two ascents to the third story are found in the L-shaped hall at the right, which had two fireplaces O and P. Only the stairs E led directly farther into the third story, while by the stairs F one could go no farther in any circumstances, than into the two adjacent rooms of the second story.

The second and third stories are divided by the tower W and the kitchen H into two portions not connected with each other, one of which besides its two galleries contains three pretty and pleasant rooms, the other a room and an L-shaped hall. S. Similarly as in the second story most stairs stop and in another place extend to the third story, it is also with the stairways that lead from the third to the defensive platform. If the enemy could reach this by the complex ways, already great neglect by the garrison was necessary, even if he had not merely attacked the gate, but had at the same time penetrated on ladders from the boats through one of the windows in the second or third stories. These windows were likewise barricaded by shutters and beams.

But if the enemy had reached the defensive platform, and he could obtain possession of it in fact, the defenders retreated into the tower, which was only accessible from the defensive platform. Fig. 112 gives the plan at this height. Today the tower is torn away there, and we leave it to the imagination of each one, whether he agrees with what is drawn, or imagines it as it was originally, whether there still found a

several stories, that could be occupied, with a defensive platform again at the top, from which men could also pelt the assailants, who had already taken the principal defensive platform. On our part we would never carry a defense farther, than an effective result is conceivable, and leave it to others to be surprised by that last man of an army, who still defends himself in the last building against the entire hostile army with heroic courage. We would not build the tower for this purpose. But it may also have another purpose; our Fig. 112 shows, that outside the entrance to the square room, that leads across from the defensive platform, yet another passage exists, that leads to a winding stairway passing downward to a smaller square room in the thickness of the wall, that has a door furnished with a bar, which opens into the shaft, that in the interior of the tower corresponds to the cellar, ground and two upper stories of the house. We conjecture, that this room served for this, that by means of a rope ladder one could descend in the tower, and that there a shaft led to a subterranean passage, which indeed ended in the tower of the Oberburg, if it did not land anywhere in the open, so that these two castles standing near each other were connected together. Yet this is indeed only a hypothesis; according to our inquiries neither an investigation has been made, by which our assumption is confirmed, nor even by tradition does the suggestion exist; indeed an expert friend is of opinion, that it would be too great a demand to require the belief, that not merely did the niederburg stand in water, and the cellar was then watertight, but also that below the bottom of the bed of the river a waterproof passage led to the land. This demand does not seem to us so great, if we examine the mighty plans of the 11 th century as well as those of the 12 th, and we also do not doubt at all, that either by this passage in the rock of the Rhine basin, or by artificial means, a watertight passage could be constructed. We see in our assumption such an actually necessary extension of the arrangements of this strong house, that we hold it wrong to not state the hypothesis.

Whoever desires to study the present condition of the mutilated remains, is referred to the drawings of von Ochausen, on which are based our attempt at restoration; there are only

added minor things like battlements, otherwise giving the existing condition.

131. Castle Ortenberg.

Meantime then still in the 13th century were always castles, that depended on the strength of the principal tower, which was still called on to resist not merely a storm, but also a longer regular siege. Although in this respect the earlier towers had proved quite good, yet men would give them still greater resistance on the one hand, on the other so arrange them, that they could participate even more actively. In Fig. 72 (p. 129) is given the plan of castle Ortenberg in Alsace, and in Fig. 73 (p. 130) is a view of the castle. There is visible on the north side of the castle the tower rising high above the other buildings, and which has a polygonal plan and is surrounded by a similarly arranged enclosing wall. We now reproduce in Fig. 116,¹⁶¹ the plan of this work (at a scale of 1 : 500).

Note 161. From Koeber, J. Die Burgen in Elsass-Lothringen. Heft 1. Pl. 6. Strasburg. 1886.

We first have to refer to the ground form of the tower itself, that so boldly turns its angles to just those sides from which an attack must be expected. It is clear, that it could oppose decidedly greater resistance by the angle to shots coming from thence, and to the breaking of a hole, that might be enlarged into a breach. But men have also surrounded the tower to a considerable height by an outer wall, that would directly receive on itself and weaken the assaults coming from the outside. This outer wall has slot openings in different stories, behind which crossbow men could stand in niches. These passages or galleries around the tower were only accessible from it, and surrounded the tower only on the four acute sides. Behind the tower the residence lay protected. Between it and the tower was at then a ditch E cut in the rock, to which one could pass from the narrow court C. Thence the way led around the foot of the tower, yet without finding such a above. The tower was exclusively accessible by the elevated bridge from the upper story of the residence. In the tower itself men ascended and descended in the usual manner from story to story, and in each upper story men entered the galleries in the outer wall. This wall bore at top two rows of

strong stone corbels for the erection of an overhanging defensive passage, which in a possible case was doubled, as indicated in fig. 73. High above a doorway at the west side leads to the open air, beneath which are corbels. Here could also be constructed a bay. Evidently there was found a weak spot below this; perhaps it was also possible to be lowered down here and to climb down over the rock, perhaps to carry a message from thence, while the besiegers thought of forcing the entrance at the east side. Aside from the small garrison, that could maintain itself in the tower of Steinsberg, by the arrangement of the outer wall with its single or double defensive passage and the slots for archers found in the lower stories, a far larger garrison was necessary to hold the tower; but for this it could also hold out long, if the other parts of the castle had already fallen.

But we also cannot leave these other works without also glancing at the residence. Opposed to the greater castles, that ever became more habitable, Ortensberg still always retained an exclusively military importance. The residence must shelter the garrison of the tower, and since it stands within the inner wall, its outer wall also forms the castle, and thus also this residence was externally furnished with defensive works; it was likewise a strong house with projecting bay and defensive gallery.

132. Tower of Castle La Roche-Guyon.

To the close of the 12th century Viollet-le-Duc¹⁶² attributes the erection of the tower of castle La Roche-Guyon, that rises on the flat upper slope of a rock, which falls almost vertically to the Seine, so that the tower is entirely separated from the castle lying at the foot of the rock, and forms a small castle by itself.

Note 162. Vol. 3, p. 80 et seq; Vol. 5, p. 58 et seq. -- We might attribute this tower first to the 13th century, since nowhere in the 12th century do we find an allied plan. The extreme simplicity of the forms, that in our opinion have their ground in the exclusively military purpose of the building, has allowed the author of the Dictionnaire to date the building somewhat too early. Positive historical statements concerning the date of erection are wanting. What Suger (abbot of S. Denis) says of the castle may indeed denote our building, but

still applies just as well to many others, and gives no positive starting points.

A very artfully arranged way leads over bridges and through narrow stairway passages cut in the rock from the castle, and at A (Fig. 117) comes from the rock into the light in the little court of the tower. The entire location and the course of this way makes it entirely inconceivable, that by this an enemy could approach the tower. The way is only one for flight and connection, that led the garrison to the lower castle. A Approach was only possible from the other side, and toward t this also a strengthening edge is given to the tower. It is no residence tower, more than the just described German, but is exclusively intended for defense and for permant holding in a long siege. Yet the entrance is not at a great height, b but is placed rather low above a flight of steps B leading to it, yet high enough to pa s on a bridge D from thence to the crown E of the wall, which on that side is pretty low. Then there is also but one quite low story under the floor of the tower, which one enters at C; above are two stories for the shelter of the garrison, accessible by the winding stairway at C, and a third round room standing at the height of the defensive platform, only enclosed by quite thin walls, in order to extend around it in the width afforded by the thickness of the lower tower, the platform as a passage surrounded by battlements. The court has at G an entrance into the outer enclosure, at P being a well. At the shard edge of the tower this court is so narrow, that at the edge of the thicker wall it is so much the more, that at the edge it is not as wide as the rise of the terrace causes, but it rises so high, that it remains only the height of a story below the defensive platform of the tower, so that it must be regarded as a sheltering wall for the tower. Uomewhat lower rises a second outer wall with a round strengthening tower I at the angle, so that on the exterior three rows of defenders over each other could r receive the approaching enemy. Around the enclosure further extends a ditch; outside this were arranged also rows of palisades.

However strong and independent was this tower with its outer walls and enclosures, still it formed only a part of the fortifications. The entire terrace was still surrounded far

outside by ditches and other works, that may be examined in Viollet-le-Duc (Art. Chateau) ¹⁶³ by whoever is interested therein.

Note 163. Vol. 3. p. 80 et seq.

We only have to mention it here in general, because for it an exit from the tower or an entrance thereto was necessary, as one prefers to express it, so that the defenders could retreat into the tower if necessity arose, and thereby in general the men within it could communicate with those in the outer works. This entrance into the castle leads, if we have correctly understood Viollet-le-Duc's drawings and descriptions, directly into the inner court through the doors H and G across a ditch F, that existed within the enclosure. In this way was a retreat possible, without disturbing the defenders within the enclosure and its wally by this retreat. Located in the projecting angle, the gate H could easily be defended against every enemy, that would enter there, since the defenders, who might always be found there, could both act from the front and side.

133. Other Castle Towers.

The same form of plan with a little greater extent has the tower of Castle Gaillard. ¹⁶⁴

Note 164. Built 1197 - 1198. -- However proud was Richard the Lionheart of this "dougheter of one yeorn", then we must indeed not take "one year" too strictly. A secure castle may have been erected in a year; but in spite of the fact that perhaps this or that individual part may be later at least, we must not deceive, and if we examine the keep in Viollet-le-Duc (Vol. 5, p. 69), we shall not doubt, that it first belongs to the 13 th century, and indeed was first built or strengthened by Philip August.

The towers of La Roche-Guyon and Gaillard show, that the proper residence tower was also dropped in France about the change from the 12 th to the 13 th centuries, then becoming simply a military work, indeed like the tower of the Old Louvre and that of the castle at Rouen ¹⁶⁵ only to be regarded as such, or that they were entirely omitted, as soon as the castle had within its circuit a series of strong houses; for as we stated at castle Ortenberg, that the house by the defensive works on its exterior became a strong house, then we

have to say of some of the buildings, which form the enclosure of Castle Coucy and of the later French castles.

Note 165. Viollet-le-Duc. Vol. 5. p. 71 et seq.

Certainly we would have opportunity still to consider thoroughly all the keeps and towers, arranged and developed in the most diverse ways, which were yet built here and there in the course of the 13th century in all countries, partly like that at Coucy, that in spite of merely military importance was at least erected in extent in adherence to the old residence tower, and partly adhering to the small German towers. But so many of such towers, so many individualities, and since most of those to be noted here are also found in the wall and gate towers of castles and cities, to which a special Chapter is devoted, we shall limit ourselves here.

134. Tower of Castle Landskron.

But we must still mention one, which is the tower of the Alsatian Castle Landskron, that we mentioned in Art. 105 (p. 129). While we reproduce here two plans in Figs. 118, 119,¹⁶⁶ we shall especially refer to the rounding of the angles, as well as to the addition of the stairway tower. After the structure, as it is assumed, was erected in 1215 after the conquest of the fortress by the emperor Frederic II, the access is also arranged in a somewhat different manner, than in the earlier German towers.

Note 166. From Koucher, J. Die Burgen in Elsass-Lothringen. Heft 2. Pl. 5. Ströburg. 1886.

As at the French castles just mentioned, an external flight of stone steps leads up to the entrance. The wall there has a special thickness of over 13 ft., so that the entrance leads to a passage about 3.3 ft. wide lying in the thickness of the wall, that is lighted by two slots, and from which one at the tower entrance does not at first see the door, that leads into the inner room of the tower. The tower room is lighted by two slits and has a door to the winding stairway. The latter is well lighted and leads up to the defensive platform; also here the entrance is so arranged, that one did not see the entrance door leading into the interior, when ascending the flight of steps. The tower has a very small ratio of height. It counts but two stories below the defensive platform, and the platform must formerly have formed a fully developed third.

The outer walls are thicker than usual; the walls of the battlements, the slots of the battlements, of which each side has only one, must have been shaped like windows; on the south side are found two corbels below the slots, so that a projecting bay could be constructed there. But beside these battlement slots like windows is also made at each side a slot for shooting, its opening widening externally. Whether in this form they can date from the 13th century or first occur in the 15th, we leave undecided. Other examples of such slots are unknown to us, while all slots of the 13th century known to us are quite narrow outside, so that even only an arrow can pass through but are wider inside, so that the besieger can scarcely see them externally, but the niche inside gave opportunity to manage the crossbow and to aim accordingly.

135. Tower of Castle Neuscharffeneck.

The chief importance of the castle tower, as we have seen in a series of examples, at the close of the 12th century no longer consisted in being a last work into which men could retreat, and in which they could still hold out in a siege, but in that during the entire siege it could disturb all the works of the besiegers, and before all in the moment of a storm could injure them, wherefore it was also placed near the weakest place, against which the besieger would naturally direct his main force. Where already toward the close of the 12th century the tower as such was omitted, there we see a work of different form take over this problem. We can substantially regard the entire rock mass of the Flechenstein (Fig. 35, p. 75) as an elongated and transversely placed castle tower; still more is this the case for the rock faced with ashlar, which is somewhat thicker than that of the Flechenstein, even if not quite as long, that forms the main front of Castle Neuscharffeneck in the Palatinate, and that we reproduce here in Fig. 120 from Naecher (at a scale of 1 : 500).¹⁶⁷

Note 167. Die Burgen der rheinischen Pfalz. Pl. 12. Strosb.-g.

We have assumed in Fig. 39, that this rock in a regular form and externally faced with ashlar had a defensive platform at top, surrounded by battlements and crowned by a roof, so that it fulfilled the principal functions otherwise belonging to the principal tower. The entrance led directly over a bridge into the rock, which was separated by a great artificial rav-

ravine from the edge of the hill rising opposite, on which the enemy must seek to establish himself. This could be made considerably more difficult, if the roof were removed from the platform, and casting machines stood there; for among all towers none afforded such a long platform as our rock, where the machines could stand in a row, even if the rock were not characterized by particular height. But from the battlements through thin slots could be sent a corresponding hail of arrows against an approaching enemy. In particular could also larger wall crossbows and other arrow casting machines be employed, even if the roof remained standing. Otherwise the rock afforded little internal space, so that it did not contain slots for shooting.

If we have correctly understood Naeher's sketches, then the wall leads through the gate from the bridge A (Fig. 120), first to a great chamber B in the rock, that beside the gate also contains a similar great opening, later walled up, whose purpose is not clear to us from Naeher's sketches. Behind this chamber extended a passage through the length of the rock, which at the north led to the entrance to the castle court, but was peculiarly arranged. For the passage ends by turning at a right angle, just at the place occupied by the second wall of rock at right angles to the first one, and stands in the interior of the court, having an opening C D like a passage, that connects both parts of the court. On this passage now ends the central passage, which is so narrow as to permit friends or enemies to pass in single file, even if they held possession of the chamber in the rock, the gate with the bridge. Now stands behind the rectangular turn of the passage also a little guard room E. If some men were therein, and there were in the inner court 3 or 4 men at each side of the passage C D, then the most superior enemy could not enter. Still in this northern part of the rock some niches are to be mentioned; there is to be noted a later slot intended for a small weapon in the guard room E, and it is to be mentioned, that on the south side of the entrance chamber a passage leads to the crown of the outer wall and by a winding stairway to the upper platform. Two little passages F and G with slots indeed primarily light the stairs, while at the same time they can serve for shooting.

136. Enclosing Wall of Castle Ehrenfels.

What in Neuscharffeneck is the purpose of this natural wall of rock, is the intention of the massive wall at Castle Ehrenfels, which encloses the castle on the side toward the ridge of the hill. We have given in Fig. 77 (p. 133) the view of the castle from the ridge of the hill, showing there from the rear the massive wall flanked by two towers. As we have stated in Art. 107 (p. 134), the castle is built on the slope of a hill, and indeed according to von Cohausen the erection occurred between 1208 and 1220.

The slope of the hill toward the south is too steep, that anywhere in the vicinity of the castle can be established great siege machines, but not steep enough so that men could not climb the slopes of the hill everywhere, since from below men in great number could be sent against the castle. Against them it had to defend itself. While then terraces with retaining walls and battlements made climbing from below more difficult, the great work on the north side was directed against the enemy, who came down from the rock above, and that was separated by a cut in the rock from the slope of the hill; fulfilling the problem otherwise falling to the principal tower. We give on the adjacent Plate the plan and section of the work together with the nearly rectangular enclosing wall lying before it.

It is a wall 16.4 ft. thick flanked by two towers A and B, whose defensive gallery was so wide (11.5 ft.), that it may well be termed a defensive platform, since at least machines for casting arrows could stand there, with which one could reach pretty well up the slope of the hill. The two towers, that later in the 14 th and 15 th centuries received original upper terminations, first supported only the simple projecting defensive galleries at the foot of the roof, from which the crossbow men could send their bolts on all sides. In the wall itself beneath the defensive platform was also found a vaulted passage, that made it possible by some slots to strike downward the cut in the rock. Furthermore there appear also holes for beams in the back of this wall, which prove that a wooden defensive gallery was constructed there. We have then drawn this as standing and in the simplest way in Fig. 77, (p. 133), while it is certainly possible, that on the battlements of the defensive platform lay a roof with defensive gal-

gallery, which was connected with this lower one; for it is

bill, to generally not allow them to come down into the
to these still states, that with such a simple form of
gallery, as we have shown it, it is impossible to reason it
the roof (fig. 77), as that there on a certain possibility it
is based, that a complicated arrangement existed, from which
descend into this defensive gallery. The remarks for which
our illustrations afford opportunity are given in Art. 107
and thus need not be repeated here.

107. House of the Emperor at Constantinople.

When the walls were built, the emperor's house was
one with progress in the 13th century, and also the tower on
might not be utilized in the moment of a storm, yet it ever
standing in the country, that lay on a road alone which not re-
ply series, but also all sorts of troops of doubtful fellows
passed. Just as the conquerors established their towers between
the principal castles as watch posts on the road, of which we
such posts were built as military stations on the roads,

so were to be seen in many places those destined to a similar
traffic routes in Germany, we may have many similar examples,
for surely it was here not different from other lands. But at
the moment is known to us no such characteristic one, as which

(fig. 121).¹⁰⁸ bears the name of House of the Bishop, and in
Viollet-le-Duc is also inclined to assume this building to be
the point of Roberts, as to not roads for a moment, that on

gallery, which was connected with this lower one; for it is nowise improbable, that if there were sufficient men to oppose 3 or 4 rows of crossbow men to the enemy descending from the hill, to generally not allow them to come down into the ditch. We must still state, that with such a simple form of defensive gallery, as we have shown it, it is impossible to reach it otherwise than through a battlement slot, through a door in the roof (Fig. 77), so that thus on a certain probability it is based, that a complicated arrangement existed, from which one was protected from the platform or the towers, and could descend into this defensive gallery. The remarks for which our illustrations afford opportunity are given in Art. 107 (p. 134) in the description of the castle in its general design, and thus need not be repeated here.

137. House of the Brigand at Connet.

When the castle tower now also completely lost its importance with progress in the 13 th century, and also the tower on buildings in the city no longer had any purpose, so far as it might not be utilized in the moment of a storm, yet it ever remained still the most suitable form for isolated houses standing in the country, that lay on a road along which not merely armies, but also all sorts of groups of doubtful fellows passed. Just as the crusaders established their towers between the principal castles as watch posts on the road, of which we have spoken in Art. 88 (p. 106), so we have found such isolated towers in Germany (Art. 103, p. 127), as in the Pyrenees such posts were built as military stations on the roads,¹⁶⁸ so were to be seen in many places those assigned to a solitary life, formal towers also yet erected as dwellings in the 13 th century and in part later. On or not far from the great traffic routes in Germany, we may have many similar examples, for surely it was here not different from other lands. But at the moment is known to us no such characteristic one, as which Viollet-le-Duc gives, which lies in the vicinity of the village of Connet near Cannes, about 2.5 miles distant from the sea, (Fig. 121),¹⁶⁹ bears the name of House of the Brigand, and must correspond to several others lying on the same road. If Viollet-le-Duc is also inclined to assume this building to be the haunt of robbers, we do not doubt for a moment, that on the contrary it was the home of very peaceful folk, who found

them to help.

NOTE 168. Vols 1-100. Vol. 6. p. 168.

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negative evidence in general.

under the necessity of having to protect themselves against robbers. Thus it served them, that the entrance was so high as to make a ladder necessary, which not everyone carried with him. For this served the bays found above, one of which was over the entrance doorway, that allowed those knocking, who were not willingly admitted, to be received with arrows, and to hold the house itself so long at night against "poor fellows", until the alarm had aroused the neighbors and called them to help.

Note 168. Viollet-le-Duc. Vol. 9. p. 168.

Note 169. Viollet-le-Duc. Vol. 6. p. 298.

138. Fortified Houses.

But therewith we believe that we have exhausted everything necessary to learn concerning castle towers and such strong houses, that appear in tower form. But we have not therefore terminated our Chapter; for as we have said already, that in the same measure as the tower of the castle recedes, the fortification of the house advances, which must afford safety against a storm. It is also similar in the cities, and if in the 12 th century the palace is defenceless, then already in the 13 th century defensive arrangements are connected with the hall structure of the castle and the palace of the city, both these applications referring to the same source, as we have already shown. We find such then until the close of the 15 th century, when fire-arms had obtained such importance, that men could never trust themselves to battlements and defensive galleries in general.

But the fortification is still peculiar. It was stated in Art. 129 (p. 167), that the houses of the wealthy and permanent residents of cities in the 11 th century were castles, but at the close of the 12 th had almost completely lost their fortress-like character. Still more was this the case in the course of the 13 th century, and the archbishop's palace at Paris (Fig. 122), as Viollet-le-Duc¹⁷⁰ has restored it, was an entirely open house, that however was furnished with battlements at the edge of the roof, from which malevolent men could be injured when approaching. A small tower is rather a reminiscence than a fortification, even if entrance be also under its protection.

Note 170. Viollet-le-Duc. Vol. 7. p. 170 -- But it is esse-

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the lower ruins.

assumed, that it could not have actually so appeared from 1160, when also Maurice de Sully consecrated the chapel.

In such manner from now onward are arranged the principal buildings of cities. The residence castle erected in Vienna about 1220 by Leopold the Glorious, consisted of four similar wings around a square court; the four angles were occupied by massive towers. According to all that is established concerning its condition then, the wings and towers contained living rooms. We know nothing at all of the defensive works. However the building of Leopold may have been rather just a "castle", 171 than many others; yet after rebuildings and extensions, after for a long time no vestige of fortification remained, it today still retains the name of "Castle"; yet was this castle so often besieged and taken until it was rebuilt under Ferdinand I. Thus also for the 13 th century it still had defensive works, and therefore was not dissimilar to the castles of the Teutonic order in plan and defensive measures.

Note 171. The 6 th volume of the "Mitt. u. Ber. d. Wien. Alterthums Vereines" is devoted to the Vienna castle, and attempts at restoration are added, but which aside from various modern forms of windows and other details, exhibit no vestiges of defensive galleries or other means of defense, and thus will not indicate the condition existing in the 13 th century, but about that in the year 1500, as so expressly stated. But we may believe, that also for secure determination of this condition do not suffice the oldest views remaining to us, that about 1500 also after the campaigns of Maximilian must still have existed much of the old works, at least in ruins, that later disappeared, and therefore no longer appears in the later ruins.

139. Marienburg.

Also the castle at Wiener-Neustadt was similarly arranged. The plans of the castles of the Teutonic Order all show four wings surrounding an inner court. Some indeed also have at an angle the great tower. It is naturally not surprising, that it did not everywhere disappear at the same time. The castles of the Teutonic Order were, so far as they were monumentally erected, just strong residences, which only bore means of defense at the edge of the roof and at the angles, as well as at the gates, stood in a ditch, so that together with their

that they should not with the outworks. The outer works indeed looked for them to have an independent strength, but primarily

...the old principal castle of Harpenden was a mark-

(side, 128, 124) 173 at a larger scale (1 : 500), also shows

...and that the negative and positive are created by him

Kate 178. See Electrecht, C. Die Bonkunft des deutschen R

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Yet a few words on our plan. At the north angle is visible

outer works they appeared sufficiently strong. It was not intended for them to have an independent strength, but primarily that they should act with the outworks. The outer works indeed concealed the lower portion of the principal building. Thus the enemy from outside could only attack the upper part; but therefore batteries and defensive galleries also had their importance, since from them the enemy could be struck. Particularly the old or principal castle of Marienburg that is marked III on the plate next page 136, and whose plan we give here (Figs. 123, 124) ¹⁷³ at a larger scale (1 : 500), also shows this arrangement. This plan already shows, that indeed the walls are massive and thick, but everywhere are opened by windows, even in the ground story. Great halls alternating with smaller windows rise in several stories, and aside from the entrance gate, it bears no longer a warlike character in the entire design, both in plan and elevation, until the battlements inform us that we stand before a strong house, whose occupants did not fear a storm, but did not intend to allow it to come to the house; for when an enemy approached from afar, the archers commenced their activity at the same time as the defenders of the outer works, over which and forming a higher inner line their arrows were shot, as soon as they could reach the enemy.

Note 172. See Steinbrecht, C. Die Baukunst des deutschen Ritters in Preussen. II. Die Zeit der Landmeister. 1230-1309. Berlin. 1888.

Note 173. From Frick. -- Also compare the plan restored by Steinbrecht for the time from 1280 to 1309 in Fig. 123 on p. 191.

Yet a few words on our plan. At the north angle is visible the manner in which the entrance is placed diagonally at the angle of the court; then is to be recognized the passage carried around the court, not unlike the cloisters of the monasteries. It may also be clearly seen, that the chapel of S. Anna lying in the northeast angle is a later addition.

The great halls of the plan show, that the building has some affinity to our barracks, and since it would readily occur, that the men in a hall could go quickly into the court, they could not be hindered by exit doors; hence their great number in proportion to the stairways. When Steinbrecht proves that

originally the southeast wing was only a granary, he may be perfectly correct therein. Doubtless in the first construction all four wings were built in this manner, and only gradually followed a monumental rebuilding.

What we modern men miss is a stair hall corresponding to the great plan. Men in the middle ages did not proceed so particularly. Stairways in any prominent plan are exceedingly rare, and when also in France we know the grandly planned Louvre stairway, then in Germany in our knowledge no similar stairways exist. Here in the Marienburg it must be difficult to establish with certainty the original plan. In the later structure is indeed at A a stairway hall; but Steinbrecht in his plan of 1280 gives only some small connecting stairs placed in the wall. We shall receive in the later Heft, which will represent the buildings under the grand masters, still further explanations of this, and if we are permitted to prepare a second edition of this work, besides many other improvements, we can indeed also work over this part to correspond.

We are now referred concerning the Marienburg always to the drawings of Gilly, Frick and Rabe, until the work to be expected from Steinbrecht will appear. What has appeared of this in the second volume of the work just mentioned, reached us after the illustrations concerned were already prepared. Therefore we cannot decide whether we are right, if we assume that originally only one stairway was built in the cloister, and indeed in the south angle at B. but if could not suffice, if there suddenly occurred a great crowd, if a great number of men passed outward and others upward at the same time, each seeking the place assigned to him. Therefore already a second stairway was built in the opposite angle at A.

Reference should be made to the peculiar manner, in which the entrance to the rooms beside the Anna chapel is arranged by the passage in the thickness of the wall. The entrance to the Anna chapel leads into it at both sides from the enclosure; at the opposite or west angle is placed the arcade resting on piers, and that bore at its rear the defensive gallery, which led across to the Danziger tower. In Fig. 123 we give the plan of the second story of the northeast wing, which contains the chapter hall and adjoining the church S. Maria.

But if the forms of the older structure belong to the 13th

century and were plain and earnest, so that this will always
and somewhat the appearance of a castle, that was scarcely af-
fected by the alterations of the 14th century, then are the
principal buildings of the middle or new castle originating
in the 14th century ostentatious structures, that in every
the appearance of the older war structures. We reproduce in
fact of the upper story of the portion containing the resi-
on the other back of the Noddy above altar, that man looked a
nothing and could be alarmed by no enemy; even the massive a-
that also by them the cheerful and friendly appearance was a
see is only based on the great dimensions in which it is built,
and which formerly appeared quite different from today, when
the building was reflected from the water in the ditch, and
still had its original roof with pointed roofs on the angle
towers. The two towers, visible in elevation (Wid. 127)
and section (Wid. 128), ¹⁷⁴ are now partly concealed in the
story.

very surprising great repository of the knights, the "great r-
" (repository). At B is a stairway in the wall leading
to the second story as a connection with the residence of the
grand master. An external flight of steps at C leads into an
anteroom, and thence following the direction of the arrow at
D into the passage to the grand master's residence; from the-
has two winding stairways E and F lead to the upper rooms and
us primarily the different internal communications, besides
the two essential vaulted halls and the magnificent monumental

century and were plain and earnest, so that this still always had somewhat the appearance of a castle, that was scarcely affected by the alterations of the 14 th century, then are the principal buildings of the middle or new castle originating in the 14 th century ostentatious structures, that in every tendency have laid aside the simplicity and earnestness of the appearance of the older war structures. We reproduce in Figs. 125, 126 ¹⁷⁴ the plan of the ground story, as well as that of the upper story of the portion containing the residence of the grand master, princely state apartments, that show their cheerfulness externally. The side of this building toward the Nogat and the side of the principal attack, that lay on the other bank of the Nogat shows afar, that men feared nothing and could be alarmed by no enemy; even the massive angle piers with their heavy projections beneath the battlements, as well as those themselves so decoratively treated, that also by them the cheerful and friendly appearance was increased, that the entire building produced, whose earnestness is only based on the great dimensions in which it is built, and which formerly appeared quite different from today, when the building was reflected from the water in the ditch, and still had its original roof with pointed roofs on the angle towers. The two lower stories, visible in elevation (Fig. 127) and section (Fig. 128), ¹⁷⁴ are now partly concealed in the raised ground. The court lies so much higher, that the third story appearing in our elevation is only the proper ground story.

Note 174. Attempts at restoration from the drawings of Gilly, Robe and Frick. (See Note 130, page 135).

There at A is the entrance into the frequently drawn and very surprising great refectory of the knights, the "great remter" (refectory). At B is a stairway in the wall leading to the second story as a connection with the residence of the grand master. An external flight of steps at C leads into an anteroom, and thence following the direction of the arrow at D into the passage to the grand master's residence; from thence two winding stairways E and F lead to the upper rooms and also down into the cellar. In the second story there interests us primarily the different internal communications, besides the two beautiful vaulted halls and the magnificent monumental

...the upper corridor, from whence they were taken through
the gate doorway I into the proper festival room, the princely
...on which also the food was brought up from
the kitchen, and taken through the passage H into the hall,
...At G is a well. Doubtless is the way K, from wh-
for the grand master unseen could look down into the great
recessory, and could thus oversee his knights. At E and M are
...that lead from the court into the lower stories.
What especially interests us in the construction of the de-
fensive galleries. We see in our Fig. 127 that stones connect-
the exterior are great aloft, through which great stones could
the wall by bolts, or on foot if the water in the ditch were
cut at the enemy, who were on the Neckar, but also first of
all from one angle tower at those, who came across the bridge,
and attacked the water gate. It appears that just for this
the entire building projected so much; for further could not
able to obtain nearly 6.6 ft. width for the defensive gallery
on the long side, and on the towers resulted platforms about
16 ft. diameter, so that from thence could still be thrown
the about to the middle. But if enemies were already within
the enclosure, but crossbows solidified for shooting arrows down
through lower openings not visible outside, and for rendering
the approach to the tower. But also in the moment of a near
danger it could not injure if windows enough existed, being
which archers with bows and crossbows could stand, even if
not fully protected.

120. Schatzkammer House in Nuremberg.
In the series of stone houses also belongs the widely known
Schatzkammer House, which was erected in the first
years of the 15th century. It contains two stories below,

passages. The stairway F was that by which guests were led into the upper corridor, from whence they were taken through the state doorway I into the proper festal room, the princely dining hall of the master. The stairway E was the inner connecting stairway, on which also the food was brought up from the kitchen, and taken through the passage H into the hall, from which was also the connection with the adjacent somewhat smaller hall. At G is a well. peculiar is the bay K, from which the grand master unseen could look down into the great refectory, and could thus oversee his knights. At L and M are entrances, that lead from the court into the lower stories.

What especially interests us is the construction of the defensive galleries. We see in our Fig. 127 flat arches connecting the piers. Between these and scarcely perceptible from the exterior are great slots, through which great stones could be thrown down, which made it extremely difficult to approach the wall by boats, or on foot if the water in the ditch were dried out. Through the slots of the battlements men could shoot at the enemy, who were on the Nogat, but also first of all from one angle tower at those, who came across the bridge, and attacked the water gate. It appears that just for this the entire building projected so much; for further could not reach even a crossbow bent by a machine. How the original construction was, we certainly do not know; but it was still possible to obtain nearly 6.6 ft. width for the defensive gallery on the long side, and on the towers resulted platforms about 16 ft. diameter, so that from thence could still be thrown powerful arrows by machines, that dominated the river and bridge about to the middle. But if enemies were already within the enclosure, had crossbows sufficed for shooting arrows down through lower openings not visible outside, and for hindering the approach to the ditch. But also in the moment of a near danger it could not injure if windows enough existed, behind which archers with bows and crossbows could stand, even if not fully protected.

140. Schlüsselfelder House in Nuremberg.

In the series of strong houses also belongs the widely known Schlüsselfelder religious house, that stands opposite Church S. Lorenz at Nuremberg, ¹⁷⁵ which was erected in the first years of the 15 th century. It contains two stories below, t

that have been entirely rebuilt, of whose original form nothing is fixed, of which we even believe that we should assume, that in general these served only as a storehouse; for not merely was the facade turned toward the cemetery of S. Lorenz; but also men would scarcely have proceeded later to such a total rebuilding, if already earlier living rooms had existed. Likewise also in the arrangement of the stairways, as they originally existed in the nearly square adjacent building, all conclusions fail.¹⁷⁶ Just as little is known of where the entrance lay and how it was built. The entire tower-like structure makes the impression, that it was already originally a portion of a larger design, although it may be proved, that the two buildings adjoining at both north and west sides did not scarcely belong to it, but that even the one now belonging to it on the west side was only added later. Thus there exists no opportunity to mention more of the nearly rectangular plan, whose similarity to the residence towers of the earlier period (particularly that of Friesach) must at once vanish, than the beautiful facade treatment of the east and south sides. We reproduce in Fig. 129 the east side, which otherwise with exception of the form of roof on the south front is similar, and only has the charming little choir before it.

Note 175. Without any reason, but only in this century (19th) it has received the name of "Kossou House."

Note 176. It probably lay at the west side between this and the adjoining house, only purchased later.

Of the two principal stories, as in the tower at Friesach, the lower is the house chapel, a great hall, that formerly had painted windows, whose form and size are in part still correctly visible by the transformations, that the windows have suffered in our time. Heideloff, even if also incorrect, has held fast to the pointed arched windows in his publication. The little choir mentioned forms the altar room of the chapel; its spire is a lantern, that contained an ever-burning light directed toward the cemetery. As in the tower of Friesach, here also over the chapel was a living room, above which was a defensive platform with battlements, to which are also added turrets at the angles. Although the living room was not vaulted, but had a beam ceiling, care was taken by a watertight covering, so that the roof could be removed from the defensive

platform, wherefore it is entirely detached from the lower construction. Still existing water-spouts served to discharge the rainwater collected on the platform. The popular opinion that always knows how to correct everything in its own way, regards differently the watertight platform, and states that a fish-pond was in the attic.

141. Hochkönigsburg.

We have reached a point in our consideration, where we could properly close this Chapter; for according as the fortification of a house is so far connected with its comfort, as at the grand master's residence at Marienburg, then naturally in the way that military architecture later followed, even the last remnant of the latter became useless. But this occurred only gradually. Still men ever busied themselves in transforming existing castles and palaces, and did not always go equally far in such transformations. Here and there men remained far behind what was done elsewhere, since changes in general always cost money. Also not everyone could favor the idea, that he could do nothing without a sufficient garrison; but when one arranged for such, that not even a storm could be repelled, and that he need not dwell in a tower, and did not require to entirely enclose his house externally.

Yet the principal building of Hochkönigsburg in Alsace, that first originated at the end of the 15th century, and as the plan in Fig. 130 ¹⁷⁷ shows, which groups its wings around a court like many other city houses, that will be mentioned in a later heft, it has not only spared the tower already existing from the earlier time, not only equipping its buildings—at least in part with defensive galleries and platforms, but also has placed relatively few windows on the exterior. It is still always a strong house, but what interests us particularly therein is not properly the fortification, which exhibits nothing new, since all that is new concerns the outworks. It is only questions of purely structural technical character of purely formal kind, that interest us on this structure, and therefore which we can consider better at another place than here.

Note 177. From drawings by C. Winkler, as well as the frequently mentioned writings of Viollet-le-Duc and Kaeher.

142. Tower at Perchtoldsdorf.

142. Tower at Perchtoldsdorf. Tower at Perchtoldsdorf.

The same also applies to all the other castles, and we can therefore close our Chapter with the presentation of a building, that occupies a quite peculiar position. This is a massive tower built only in the 15 th century and now detached, that rises in the market of Perchtoldsdorf not far from Vienna; a belated descendant of the old keeps and residence towers, higher than any of its true predecessors. (see adjacent plate). It formed a part of a greater castle plan, but indeed stood entirely distinct from that, projecting at an angle of the wall enclosing the castle, and only connected with the other buildings by the crown of the wall, therefore being free. The entrance doorway in the second storw, the subterranean passage for flight, all recall the old time, also that a chapel occupies the second story, and above which are built the three pretty living rooms. Indeed what purpose the high upper room with its church windows has, we cannot explain, and the open passage, that leads around externally shows only, that men no longer sought protection for archers (in any case already musketeers), if in general they thought of placing such.

The entire tower is only a piece of decoration. If generally one could doubt its age, still he must believe that a modern architect erected it, who had rather an understanding of romantic harmony, than of mediaeval military architecture. An explanation of this we partly find, that in the examination of older buildings of every region similar towers are found, probably of earlier origin, arranged somewhat differently at the time of their erection. Thus the four towers of the Vienna castle, for example, which on the old views exhibit entirely similar galleries, but which as Leopold the Glorious built them, may have been more like those of the Krak, as they appear in Figs. 55, 60. Also the battlements, which that tower may well have had and others, may have been of masonry, and such towers were also therefore mere ornamental pieces, that men held to be important for the character of a castle, and accordingly reproduced here as decorative pieces.

If we end our Chapter with this ornamental piece, then some reader may ask, why this or that castle was not given under the name, why this or that strong house was not mentioned, that indeed is so widely famous. Now then, we could certainly have increased the series of examples by a good number; but

As pointed out in the previous chapter, the houses of the
early settlers, as they were built, were of the same
type, and the only difference in construction was the
placement, differing as far as earlier natives are concerned,
frequently retained very long and again repeated on the same
site. The early settlers, however, found it difficult to
locate their new dwellings, since the old ones were
but finally many right houses "casas" are no longer, but
are very peaceful buildings, that houses occur on the sites
of houses as for example, the old houses of the
early settlers, and therefore will be mentioned
in the following text, although it lies on the hill and is
called "casas". Likewise the other structures, that stand
as houses without serving the purpose of houses, such as
dwellings and chapels, kitchen, etc., to be mentioned in a
later part of this book.

we should not have thereby gone substantially farther; for so many castles, so many individuals, each different from the others, yet differing only in relation to combinations of the elements, differing so far as earlier motives are retained, frequently retained very long and again repeated quite late. But many castles present therein special difficulties, that parts from the most different times stand beside each other; but finally many right famous "castles" are so no longer, but are very peaceful buildings, that perhaps occur on the sites of castles, as for example, the Albrechtsburg at Meissen, that no longer is a strong house, and therefore will be mentioned in the following Heft, although it lies on the hill and is termed a "castle". Likewise the other structures, that stand in castles without serving the purpose of defense, such as dwellings and chapels, kitchens, etc., to be mentioned in other Hefts of this book.

of the middle ages in regard to various details, then we find as the most important the particular enclosure of the entire area by earth wall and ditch or by a massive wall. We have occasionally stated concerning this, that the ancient German material for a wall, that received a great deal of palisades, was continued down into the middle ages, that it no longer had but had rock exposed, and did not sink to out the ditch in the rock, and piled up the stone blocks removed in a wall just as one of earth. Since everywhere it was the endeavor to make the fortifications usually as quickly as possible, then everywhere the fortification with earth and wood was that it occurred, and only gradually originated instead of these extensive of stone walls. The stone walls were built up with the material of the ditch, and the ditch was filled up with the material of the ditch. The stone walls were built up with the material of the ditch, and the ditch was filled up with the material of the ditch.

generally frequent enlargements. A difference is not to be made between the construction of a castle and a city wall. Where such exists, it does not lie in the different purpose, but in the advantages resulting from the form of the ground, or it is based on the lack of material, just did not permit taking full and entire account of the construction of the wall. The stone walls were built up with the material of the ditch, and the ditch was filled up with the material of the ditch. The stone walls were built up with the material of the ditch, and the ditch was filled up with the material of the ditch.

We have mentioned in Art. 15 (p. 18) as one of the oldest city walls that of Carcassonne; yet however only its foundation is as old; but it shows that the wall was originally strengthened by semicircular towers, that were solid below and attached it. But later at the rebuilding in the 12th and 13th centuries, each tower could be separated from the crown of the wall as a detached fort, appeared in this rebuilding.

Chapter 11. Earthen Wall and Ditch, Walls and Towers.

143. Earth Wall, Ditch and Walls.

If we wish to study further the nature of the fortifications of the middle ages in regard to various details, then we find as the most important the particular enclosure of the entire area by earth wall and ditch or by a masonry wall. We have previously stated concerning this, that the ancient German method by the excavation of a ditch and the use of the removed material for a wall, that received a breastwork of palisades, was continued deep into the middle ages, that if no soft ground but hard rock existed, men did not shrink to cut the ditch in the rock, and piled up the stone blocks removed in a wall just as one of earth. Since everywhere it was the endeavor to make the fortifications usable as quickly as possible, then everywhere the fortification with earth and wood was that first occurring, and only gradually originated instead of these earthworks or behind them massive walls, that gave a more substantial and more resistant fortification. This in part only occurred quite late, and particularly our cities generally show no very old walls, and also their frequent extension made necessary frequent enlargements.

A difference is not to be made between the construction of a castle and a city wall. Where such exists, it does not lie in the different purpose, but in the advantages resulting from the form of the ground, or it is based on the lack of materials, that did not permit taking full and entire account of the requirements of safety. Thus as already we have shown the walls of castle Arques (Fig. 17, p. 55), may also have been those of many cities. As there were first constructed earth wall and ditch, to which were later added the walls, and only after the lapse of a longer time the towers, so was it also for most cities.

We have designated in Art. 15 (p. 18) as one of the oldest city walls that of Carcassonne; yet however only its foundation is so old; but it shows that the wall was originally strengthened by semicircular towers, that were solid below and adjoined it. But later at the rebuilding in the 12th and 13th centuries, this plan was retained; likewise the arrangement that each tower could be separated from the crown of the wall as a detached fort, appeared in this rebuilding.

We give in Fig. 131 the section of the wall of the Salzburg near Neustadt on the Frankish Saale, indeed the part beside the entrance gate.

This has a thickness of about 10 ft. and a height of about 23 ft.; it stands at a distance of about 30 ft. from the edge of the ditch, and it is still noticeable, that the slope of the ditch cut in the rock is continued as a wall above the ditch. It is therefore to be assumed, that a second wall, of which a few remains are still to be seen, surrounded the great ditch outside. This wall was crowned by palisades and in any case formed the original enclosure of the castle. At what time it was abandoned is doubtful. At the close of the 11 th or beginning of the 12 th centuries may have been erected the wall behind it. We have already said of it in Art. 55 (p. 47), that already in the 12 th century at certain places windows were opened in the wall, which reduced the safety and strength in the sense of that time, and must also have been considered in the erection of the walls and towers of an earlier time. Only the tower faced with ashlar with bosses, that is directly visible on our section, belongs to the later 12 th century onward, and was erected at the same time with the opening of the walls, since on both is found the zigzag astragal as an ornament. The battlements remain at only one place on the wall, and indeed with oblique covering of the verticals, such as is peculiar to the 14 th century. Yet its design, particularly so far as concerns the widths of verticals and of slots, still belongs to the earlier time. The wall required protection from the effects of weathering, and doubtless received this by a constructed roof, that also protected those on the wall. Towers of rectangular plan projecting from the wall are found only on the northeast side, there being three of them.

144. Enclosures.

By the erection of the wall behind the earth wall there resulted what was later called an "enclosure" (zwinger): a special area for defense between two walls, the rear one of which is to be regarded as the principal wall and is higher, the front one being lower. The chief purpose of this arrangement is that the besiegers could not so easily reach the wall proper with battering rams or rolling towers, but must already halt at the lower and outer wall, as well as that two rows of

"single". The French call the winner "l'écoué", from the German word "leuten". In the 14th century occurs also the word "par-cham" for this immediate area.

At such a point one must have indeed been satisfied with a single type of wall.

142. General Patton Hall to Colonel. 20 October 1942.

In the most interesting way the ancient earth wall of the

1882. Published by Architects, and Engineers, Union for Forest
Rhine and Westphalia. 1882.

archers behind and above each other would relieve the approaching enemy. When for this area between the two walls the term "enclosure" (zwinger) arose is hard to determine, but manifestly only tolerably late. But the thing itself in any case goes far back. Already the ancient German earth walls show partly around, and partly in certain places are such earth walls before the main earth walls. Everywhere and at every time men sought to increase the strength of the plan by such external earth walls to at least leave a row of palisades at a certain distance outside the main wall. We have various earlier appellations for such outer walls, such as "hamit", "zingulum, the zingel." Schultz assumes that "zwinger" comes from "zingel." The French call the zwinger "lices", from the German word "letze". In the 14 th century occurs also the word "par-chum" for this intermediate area.

A definite rule for the distance of the outer or enclosure wall from the principal wall behind is not to be found; the distance frequently seems considerable, particularly if, as at a castle, the main wall lay high on the rock and the outer line of palisades was drawn about the base of the rock. However every such enclosure requires the necessary men, and for lack of such one must have indeed been satisfied with a single line of wall.

145. Ancient Earth Wall of Cologne.

In the most interesting way the ancient earth wall of the city of Cologne ¹⁷⁸ could be recognized till recently, that until the close of the 12 th century formed the chief defensive work of the city; first from then onward, on this completely remaining wall was set the stone wall with its foundations sunk into it.

Note 178. See *Cölnner Thorburgen und Befestigungen*. 1880 - 1882. Published by Architects' and Engineers' Union for Lower Rhine and Westphalia. 1883.

The earth wall indeed originally, accordingly as the ground itself presented elevations and depressions, had an average height of 20 to 23 ft. above the natural ground, about the same width at top, and further about 23 ft. depth of the ditch, so that the height from bottom of the ditch to the crown of the wall amounted to 40 to 46 ft. In erecting the wall of masonry, on which work continued from the close of the 12 th to

about the end of the 14 th century, men set piers on separately sunk foundations, that stood about 26 ft. from centre to centre, were connected by arches closed by relatively thin external walls. In the arched recesses of the wall were arranged slot-shaped openings for shooting. ¹⁷⁹ On the arcade was the crown of the wall about 11.5 ft. broad, on which the defenders could conveniently pass back and forth beside each other. On the outer side of the wall it terminated in a series of battlements. This finally gave way to a different crown; yet still at certain places sufficient remains existed to give us an idea of it. At distances of about 229 ft. were inserted in the wall projecting semicircular towers open at the rear. Also slots occurred in the half towers. In the thickness of their walls were stairs that led from the earth wall to the crown of the masonry wall. The height of the towers exceeded that of the battlements by but a small amount; a passage through the tower connected the crowns of the parts of the wall, that lay at both sides of them. We can assume that this system was established at the close of the 12 th century, and it was retained so long as work continued on the wall. As material served basalt prisms left in their original form, that were employed partly as stretchers and partly as headers. extending through the entire thickness of the wall where possible, and between which were employed regularly cut tufa blocks, partly forming regular courses, partly also composing connected parts of the wall, indeed if the basalt material did not exist to correspond. If the wall must be permanently preserved without causing the cost of continual repairs, a roof must be built over it, which could be so arranged, that also at the time of combat it would not hinder, and in bad weather would protect those remaining on the wall. On the old towers, that by the slight excess in height were not in condition to afford substantial protection to the crown of the wall itself, we have to conceive still a projecting wooden story, from which arrows could be shot to all sides. These towers had particularly the problem of receiving an enemy, that approached the wall, and if he was already at its foot, to effectively fight him from two adjacent towers. But their own feet must be protected, that could be done by a projecting story. The outer side of the ditch was also originally inclined. At a later t

[illegible]

time in place of the slope appeared a retaining wall, so that only the great slope was at the foot of the wall. First in the 14th and 15th centuries was arranged a second similar ditch outside the first, separated by a small interval.

Note 179. They did not originally exist in the older portions and were only added later, but may at once have been constructed with the later wall. The same may be true in regard to the slots in the towers.

The retaining of the inner earth wall and placing of the masonry wall thereon naturally produced a quite imposing height for the entire arrangement. Since the wall has no deep foundations, an enemy could succeed in excavating a passage beneath the stone wall through the earth wall to the interior, and we indeed know of an attack, that at the beginning of the 13th century was attempted in this way at the south side of the city, in which only the watchfulness of the defenders prevented the entrance of the enemy through this breach.

On the adjacent plan is represented a portion of the wall of the southern part of the city after the drawings by Wiethase and the restorations there given. If we had to make such, we should give the tower a battlement cornice, that still must be in place for the 12th century; still even most of the towers were only built in the later time. In Carcassonne, where similar semicircular towers already stood in the Visigothic, perhaps also in the Roman walls, not only are recognizable battlements, but also clearly the separation of the different towers from the crown of the wall, with which they are connected by a bridge, that could easily be removed, as at the tower of the Salzburg.

We shall call attention to only one, and then refer to the Plate adjoining page 212 (section). After the wall had once been erected on the earth wall, this hardly retained the top of its upper natural slope on the exterior of the stone wall; indeed it formed entirely by itself a small wall crown at the base thereof; this furnished a footway around the stone wall. If this were protected by a breastwork of palisades, then could it still do good service for defense. Access could easily occur from the wooden defensive galleries, built on the connecting passages, that from the gate towers extended to the outworks, as represented on the illustration mentioned.

...the Roman ... placed both rectangular and circular ... towers at such intervals ... allowing them to project, so that towers placed in them could sweep the entire foot of the wall between each two towers, and so could make it impossible for the enemy to establish himself at the foot of the wall. Indeed we find constant use made of towers only in cities, which had at command sufficient men also to garrison the towers wall. In certain cases were frequently lacking, since sometimes the impossibility of the practice of rock made it impossible to particularly care for the foot of the wall, but then also because the men were not at hand to man them. The example of the Salinero shows, that also in cities, towers were placed at such intervals ...

For what concerns the form of the towers, there also occur beside each other in the middle ages the two forms common to the Romans at all times, and it is not established, that under definite external assumptions men preferred one or the other form, or that the contrary is shown by certain countries and ...

...the towers reproduced on the adjacent plates of the previously represented castle of Tortosa in Fig. 51 (p. 108) are of far greater dimensions, than all similar buildings of the West. In particular the great and deep ditches, that are cut in the rock, nearly to the surface of the interior sea water, on their external side as a continuation of the walls and towers rising above them, are lined with ashlar with bosses, entirely surrounded. The ashlar with bosses are of large dimensions, more than in our German buildings, and substantially contribute to the greatest expression of the appearance. The inner walls, which in any case Wilbrand of Oltenburg already saw in the beginning of the 12th century, even if covered also not in its later history, was here the nearest of the towers and not merely a defensive gallery on the crown of such a wall, that even machines for casting stones could be placed there, protected by a wall with nearly square openings, but also with a passage below them, that ex-

Already the Romans placed both rectangular and semicircular towers at such distances in its walls, allowing them to project, so that archers placed in them could sweep the entire foot of the wall between each two towers, and so could make it impossible for the enemy to establish himself at the foot of the wall. Indeed we find consistent use made of towers only in cities, which had at command sufficient men also to garrison the towers well. In castles these were frequently lacking, since sometimes the inaccessibility of the precipice of rock made it superfluous to particularly care for the foot of the wall, but then also because the men were not at hand to man them. The example of the Salzburg shows, that also in cities, where conditions permitted, men knew how to prize the wall-towers.

For what concerns the form of the towers, there also occur beside each other in the middle ages the two forms common to the Romans at all times, and it is not established, that under definite external assumptions men preferred one or the other form, or that the contrary is shown by certain countries and schools. We find both forms during the entire middle ages occurring beside each other.

146. Walls in Tortosa.

Like all military buildings of the crusaders in the Orient, so also the doubled towers reproduced on the adjacent plate of the previously represented castle of Tortosa in Fig. 51 (p. 103) are of far greater dimensions, than all similar buildings of the West. In particular the great and deep ditches, that are cut in the rock, nearly to the surface of the introduced sea water, on their external side as a continuation of the walls and towers rising above them, are lined with ashlar with bosses, entirely surprising. The ashlar with bosses are of large dimensions, more than in our German buildings, and substantially contribute to the grandest expression of the appearance. The inner walls, which in any case Wilbrand of Oldenburg already saw in the beginning of the 13th century, even if perhaps also not in its later height, was here the height of the towers and not merely a defensive gallery on the crown of such a width, that even machines for casting arrows could be placed there, protected by a wall with nearly square openings, but also with a passage below them, that ex-

extended through the entire length of the wall, and could serve both for crossbow men as well as for archers, who stood behind the row of longer slots, which permitted from this passage a formal shooting of near enemies with rapidly shot arrows. At the foot of the wall was found in recesses a second row of such slots, behind these being vaulted structures, that perhaps first belonged to a later time; they formed a substantial support of the high wall; their platform may have borne casting machines, that slung far-reaching great balls upward and over the wall. ¹⁸⁰ There may be clearly recognized from the adjacent plate the importance of the projecting towers, that also have slots in their sides, by which if the enemy had reached the wall, he could be effectively fought through the sides.

Note 180. Also otherwise, as in the Louvre, is mentioned the placing of such machines in courts in places where direct aim was impossible.

We have before stated, that probably in the beginning of the 13th century only the inner wall stood, and that the outer one with its towers was only added in the course of the later one. Possibly the inner one was also first raised then, in order to be able to shoot over the outer one at a corresponding height. A moulding that lies just at the height of the passage, the probable original crown of the wall, would otherwise have no meaning. To establish the external line of defence, there was first cut a second ditch in the rock and leaving the wall, then a second rather lower wall was placed on the wall, likewise furnished at its base with recesses and slots for shooting; it had a height of about 20 ft., and was then crowned by a battlement wall 13 ft. high with rectangular window openings. On it could thus stand two rows of defenders, over which also if the enemy came too near, the defenders of the inner wall in two rows could send their arrows. But the defensive platforms of the towers were spacious enough for the great casting machines. Certainly archers, at the great distance of 164 ft. of the inner wall from the outer edge of the ditch, could scarcely have produced much result; but on the other hand the question of the inner wall was entirely able to command the outer one, in case this was taken, and the enemy desired to establish himself there.

147. German City Walls in the 14 th and 15 th Centuries.

Essentially simpler in form was the system, according to which the German cities constructed their circuit of walls from the close of the 13 th to in the 15 th centuries, corresponding to their means and their defensive strength. The comparison of the walls of Nuremberg, which as a characteristic example we can place beside those of Tortosa, show this surprising difference. We have stated in Art. 33 (p. 35), that at the close of the 14 th century the construction of this wall was begun, and we have given in the plate next page 34 a general view of the city fortifications. We show here on the adjacent Plate a part of the enclosure of the south side, indeed that directly before the Carthusian monastery. When the system was fully established, indeed firearms were already in use in Nuremberg. But they were still so little developed, that they were not employed generally in defense, and the walls were also not arranged to resist artillery. But the arrangement was found, that a greater number of men could already receive the enemy with shots on his approach. Principally here may the crossbow have been intended as the weapon, in whose place also firearms may have appeared separately. Great casting machines found their places in the outer enclosure.

As everywhere, so men first sought here to establish a simple enclosure as quickly as possible, which was then gradually strengthened, until at last the city ditch, probably at first narrow, was excavated and finally received the great width, which still surprises us today. Then passed a series of decades; but there is scarcely any doubt, that perhaps excepting a few details, the entire plan was already conceived in the 14 th, as it was executed in the course of the 15 th century. Men first appear to have begun to build a simple wall about 3.3 ft. thick, that had different heights at various places, but 23 ft. as an average. This wall originally had no strengthening piers, as one can still see on a small piece north of the Spittler gate, where also the inside face is dressed even and plain. But certain headers project, that allow it to be seen, that men already then designated the places at which should later be built the piers. Then these were constructed nearly around at about 20 ft. between centres, with widths of 3.9 ft. and projections of 2.5 ft., a base projecting 0.7 ft. The pi-

The ground was a low projecting of soil area, thereby a pro-
tection of 5.3 ft., of which however one foot goes for the base
of the wall, whose thickness is the more striking, since men
already had to face cannon balls. The muretta knew well,
that the neighboring muretta, that even their constant oppo-
nents, the murettas of the muretta, possessed few cannons. The
murettas were partly constructed of muretta, or made of
muretta in certain pieces. The verticals had a breadth of 5.0
ft., the spaces being 2.0 ft.; each vertical had one side, a
the total height of the battlements amounted to 6.6 ft. For
protection against the effects of weather a roof was placed
over the battlements, that covered a covered defensive gallery.
At distances of about 14 ft. two smaller towers are inter-
posed in the walls, that projected inside but little, yet sur-
rounding outside, and have about 26 ft. width. One story of these
is level with the crown of the wall; over it are nearly two
stories, the top story being very low. The battlements are
in the range of the wall is divided in two stories, the top
story being very low. The battlements are
of muretta could stand in one tower. It is characteristic,
that the towers at both sides are connected by great doorways
with the defensive galleries of the walls, so that connection
through the towers was least obstructed. The idea of making
of a castle must be separately described. Just as there was the
entirely in the towers of muretta, is proper, since the
enemy would scarcely have done this, and because the interrup-
tion of the crown of the wall at each tower would have obstru-
cted passage in the defensive galleries, so that in the muretta
of muretta this might be fatal. Access to the crown of the
wall in the third story an entrance doorway from the city, a
and in the interior was only obtained by ladders, instead of
which later very bad stairs were found. A little bay at the
side of each tower with open floor contained a privy, evidence
that in these towers at least some men remained permanently.
Later the towers were also furnished with chimneys and could
be warmed: on this occasion also most of the sides were con-
nected into small windows. Certain towers show, that they were

piers are connected by round arches with masonry spandrels.

The crown has a cap projecting at both sides, thereby a breadth of 5.3 ft., of which however one foot goes for the battlement wall, whose thinness is the more striking, since men already had to face cannon balls. The nurembergers knew well, that the neighboring nobles, that even their constant opponents, the margraves of Brandenburg, possessed few cannon. The battlements were partly constructed of ashlars, or made of bricks in certain places. The verticals had a breadth of 5.9 ft., the spaces being 2.0 ft.; each vertical had one slot, the total height of the battlements amounted to 6.6 ft. For protection against the effects of weather a roof was placed over the battlements, that formed a covered defensive gallery.

At distances of about 164 ft. rectangular towers are inserted in the walls, that projected inside but little, yet strongly outside, and have about 20 ft. width. One story of these is level with the crown of the wall; over it are mostly two and in part also three others; the lower part of the towers to the height of the wall is divided in two stories, the lower one of these indeed being very low.¹⁸¹ Altogether 4 rows of archers could stand in each tower. It is characteristic, that the towers at both sides are connected by great doorways with the defensive galleries of the walls, so that connection through the towers was least obstructed. The idea of making each tower a separate castle, that like the principal tower of a castle must be separately besieged, just as this was the endeavor in the towers of Carcassonne, is dropped, since the enemy would scarcely have done this, and because the interruption of the crown of the wall at each tower would have obstructed passage in the defensive galleries, so that in the moment of danger this might be fatal. Access to the crown of the wall therefore occurred through the towers,¹⁸⁷ each of which had in the ground story an entrance doorway from the city, and in the interior was only obtained by ladders, instead of which later very bad stairs were found. A little bay at the side of each tower with open floor contained a privy, evidence that in these towers at least some men remained permanently. Later the towers were also furnished with chimneys and could be warmed; on this occasion also most of the slots were changed into small windows. Certain towers show, that they were

originally open at the city side. But most were already originally closed by a wall with little windows, which however everywhere had only about half the thickness of the other three walls. Battlements appear to have never existed on these towers. The adjacent plate shows in the internal elevation the low roof of the tower, just as now the towers of the region are covered almost without exception, while in the other elevations the roof is drawn after an older construction found in the vicinity, as several such are preserved. The closed dormer windows, as well as the two adjoining openings, allow some archers to be placed up there. While the construction of the bay of brick masonry permits the conclusion, that this tower was built in the 15th century first, there is a number of others in the circuit of the walls, that at the edge of the roof only on the outside have two stone angle turrets, that serve as sentry boxes for one man in each, and at the same time besides observing the vicinity, made also possible the sending of arrows therefrom. (Fig. 132). These may have been constructed even in the 14th century.

Note 181. According to the location, there occurs some variety in these.

Note 182. meanwhile at certain places one also finds flights of steps outside the towers, that lead to the crown of the wall.

Before the wall and towers was then an enclosure averaging 56 ft. wide. When we see in Tortosa that this is divided by the ditch and is only very narrow, and that also a high wall stands before it, then we recognize at once, that casting machines could not so well be placed there as in the wide Nuremberg enclosure. But at this also only one retaining wall existed and no other high wall, so that the casting machines indeed could be seen from outside, but also the men serving them could see directly just where they had to aim their machines. Movable wooden walls gave sufficient protection. Thus the wall of the enclosure is replaced by simple battlements on the retaining wall. Only a few remains of these battlements still exist; but they allow it to be plainly recognized, that the construction was exactly the same as that of the upper battlements, so that we can also assume, that likewise a wooden defensive gallery protected the masonry, i.e., even a roof.

In our representation of the condition of the city wall of

...as it existed in the 14th century, no person wall
is assumed on the outer side of the ditch. This external side
was then surrounded by the enemy; means of protection, so that
he should not fall into the ditch and injure himself did not
belong to the defense; but still less would one afford him
the opportunity to shelter himself behind such a wall. But
the proper inhabitants, who went into the open before the wa-
ter in the rivers and festival days, must themselves take care,
that they received no injuries. Meanwhile yet appear here and
there to have existed such protecting walls. Yet this always
indicates according to our opinion, that not merely before the
the gates still existed outworks, but that there were also
connected by walls, ditches and rows of bastions.
Consequently this system was not carried out in all cities
walls of masonry, so far as the others could raise the means
for it.

Where this was not the case, men fortified themselves, as
as the means would permit. We find here and there relatively
low and in part quite thin walls, whose crown was too weak to
bear a defensive wall in front; hence there was also co-
operatively be strengthened by ditches and arches, and thus all-
round a sufficient height and the necessary thickness was still
this was possible when aided by heaving earth or by a wood-
work framework behind the wall. Our preceding illustrations,
particularly the representation of the gates, show some cases
of this kind. Thus for example, we give below the water gate
at Trier, of which we know, that it had an outwork, wa-
ter at both sides was joined by a wall extending before the
city wall, that formed an outer line of defense outside the
ditch. The city wall itself, although formerly strengthened by bat-
lements, is there so thin, that it could only offer resist-
ance, when inside at the base was a great bank of earth, and
a wooden scaffold presented a defensive gallery, on which the
defenders could act.

...the crown of the wall extends in a range; b
they were more or less considerable inclines over the hill.
occurs. Yet everywhere do the walls run horizontally; in part
lives below, another interesting part of the city wall of 15th-

Nuremberg, as it existed in the 14 th century, no parapet wall is assumed on the outer side of the ditch. This external side was that approached by the enemy; means of protection, so that he should not fall into the ditch and injure himself did not pertain to the defense; but still less would one afford him the opportunity to shelter himself behind such a wall. But the proper inhabitants, who went into the open before the walls on Sundays and festival days, must themselves take care, that they received no injuries. Meanwhile yet appear here and there to have existed such protecting walls. Yet this always indicates according to our opinion, that not merely before the gates still existed outworks, but that these were also connected by walls, ditches and rows of palisades.

Substantially this system was now carried out in all city walls of Germany, so far as the cities could raise the means for it.

Where this was not the case, men contented themselves, as it might be, only with the thought of executing them as soon as the means would permit. We find here and there relatively low and in part quite thin walls, whose crown was too weak to place a defensive gallery thereon; indeed these must also occasionally be strengthened by piers and arches, and thus afforded a sufficient breadth for the defensive gallery. But till this was possible men aided it by heaping earth or by a wooden framework behind the wall. Our succeeding illustrations, particularly the representation of the gates, show some cases of this kind. Thus for example, we give below the water gate at Tangermünde, of which we know, that it had an outwork, which at both sides was adjoined by a wall extending before the city wall, that formed an outer line of defense outside the ditch. The city wall itself, although formerly adorned by battlements, is there so thin, that it could only offer resistance, when inside at its base was a great bank of earth, and a wooden scaffold presented a defensive gallery, on which the defenders could act.

Fig. 139 shows beside the tower, on account of which it is given below, another interesting part of the city wall of Lucerne. Not everywhere do the walls run horizontally; in part they make more or less considerable inclines upon the hill. When this occurs, the crown of the wall extends in a ramp; b

but where as here the inclination was too great, the crown of the wall forms a series of steps, which are protected by a covering outer wall in great offsets.

148. Wealth of Forms in the Later Towers.

In the treatment of towers of the 14 th and 15 th centuries developed a lively sense of form. Simple, we might almost say insipid forms of the Nuremberg towers are shown especially by those of north Germany, permitted there by the development, which there adopted construction of bricks, after truly fantastic forms. But also other regions, thus Bohemia and particularly Prague, exhibit in their towers a development, that permits seeing, that they are rather ornaments for the decoration of the city, than military structures for its protection. Also in the waves of the Rhine are reflected towers -- we recall only those at Oberwesel and Andernach -- that are indeed still fortress towers, but which one clearly sees, that they were not merely to protect the city, but also to please the inhabitants, first of all to permanently impress the view of the city on those passing by it. As military structures they show us little new. They will be mentioned in speaking of the gates, since just their towers afford opportunity to emphasize these peculiarities. Here will we recall some, that indeed are less capricious but are typical of them. Thus Fig. 133 ¹⁸³ shows us a semicircular tower from Aix-la-chapelle, which is very characteristic for the towers of this plan in the later time.

Note 183. From Rock.

As beside the rectangular we also find round castle towers, so do we also find full circular towers in the walls of cities. A tower in Gransee (Mark Brandenburg) may in its plan even go back into the early time; it was even a castle by itself, without any passage for connecting the crowns of the walls separated by it. (Fig. 134) ¹⁸⁴ Like a castle tower, it has its entrance high above the ground; but the upper part with its richly animated battlements even belongs thus to a later time, to the close of the middle ages, like the upper openings for small firearms.

Note 184. From Adler, Pl. 77. The entrance now existing in the ground story was naturally only opened later.

A smaller round tower, but which by its location is import-

important for the defense of the city is the small Gruber's tower at Cologne. (Fig. 137). Belonging to the 14th century, it also originally had only a single story, but later received windows. The series of battlements surrounding the tower tower as a rule of height, but the middle tower is somewhat higher. According to the analogy of other towers, the little tower appears to have never had.

Note 137. From Niehoof. Pl. 51.

We cannot here refrain from also again returning to the form of the two towers, which decorate the main structure of the castle. In the 13th century quite simple projecting wooden framework extended for the defensive gallery, and we have no representation of the towers on the plate given there. There is also added in the towers the form and size, that one tower received later. These roofs, whose form may be reconstructed with undoubted certainty from the other copper engraving mentioned in Art. 137. (Fig. 138). It will at once justify the expression "corner", which we have just employed, but will also show, how much allied one of the towers is in form to the Gruber's tower in Cologne. The transition from the round to the octagonal, the projection of the upper beyond the lower part, which is too small, for the greater needs of fortification to permit, indicates that just as the four little have at the end of the roof of the second tower, that the architect is determining its form rather came to producing an artistic effect, than to increase the resistance.

138. Fortification of the tower in the tower of Cologne. The towers developed in the course of the 15th century to a form which was called as an important means of defense to take a determining influence on military architecture, never to be repeated. In Nuremberg first one chance after another was therefore made in the old fortifications.

When they first have attempted to insert later ones in the place of the battlements of the outer enclosures, that in the 15th century the nature of the shooting has made so wide, it

important for the defense of the city is the small Cunibert's tower at Cologne. (Fig. 135). ¹⁸⁵ Belonging to the 14 th century, it also originally had only slots at the places, that later received windows. The series of battlements surrounding the tower rests on a row of corbels, that are connected by ornamental arches; a pointed roof, such as must have existed according to the analogy of other towers, the little tower appears to have never had.

Note 185. From Niehose. Pl. 51.

We cannot here refrain from also again returning to the form of the two towers, which decorate the main structure of the castle Ehrenfels, and with the exception of the roofs are yet preserved. We have previously stated (Art. 136, p. 178), that in the 13 th century quite simple projecting wooden framework extended for the defensive gallery, and we have so represented the towers on the plate given there. There is also added in dotted lines the form and size, that one tower received later. These roofs, whose form may be recognized with undoubted certainty from the older copper engraving mentioned in Art. 107, (p. 134), show that also on the Rhine such were native, and a glance at Fig. 77 will at once justify the expression "ornament", which we have just employed, but will also show, how much allied one of the towers is in form to the Cunibert's tower in Cologne. The transition from the round to the octagon, the projection of the upper beyond the lower part, which is too small, for the proper needs of fortification to require, indicates that just as the four little bays at the edge of the roof of the second tower, that the architect in determining its forms rather came to producing an artistic effect, than to increase the resistance.

149. Introduction of Artillery in the System of Defense.

Firearms developed in the course of the 15 th century to ever greater importance, and soon the advance allowed, that they were called as an important means of defense to take a determining influence on military architecture, never to be rejected. In Nuremberg first one change after another was therefore made in the old fortifications.

Men may first have attempted to insert large guns in the slots of the battlements of the outer enclosures, that in the 15 th century the nature of the shooting had made so wide, t

that they might be employed with results, so that guns are found in place of casting machines. But in general the first influence of the use of firearms shows itself in a series of towers, that in the city ditch are mostly attached to the retaining wall only in its own height, and without needing to be particularly large, they first of all had the purpose to cover lengthwise the city ditch itself, and thus to hinder the enemy from building a causeway therein, then being able to penetrate into the outer enclosure. First with the close of the 15 th century men proceeded, removing the old battlements of the retaining wall of the enclosure and giving it a crown raised about 6.6 ft. above the glacis, that contained embrasures for large cannon, but at the same time was strong enough to resist a stone ball coming from outside. It may already fall in the 16 th century, that also the upper stories of certain towers were furnished with embrasures.

With the introduction of guns and their establishment behind the wall of the outer enclosure, this became the main line of defense, which even had the main problem, to not at all permit the enemy to reach the wall. This purpose also was served by small towers like bastions, that were intended at places where the enemy could not merely move in a line against the wall, to maintain a strong fire toward all sides, by which both the ditch at both sides was swept, and also the different points outside could be struck. The oldest tower like a bastion of the Nuremberg wall appears to have been that, which stands in the vicinity of the little Haller gateway, and indicates a development of the semicircular tower of the earlier period. We give the plan in Figs. 136 to 138, the outer elevation and the section of this interesting little work.

The lower portion of this, that corresponds to the depth of the city ditch is simply filled. At the height of the enclosure then is a low story with 5 niches, each of which has an embrasure for a small gun; under the roof are arranged holes to allow the smoke to escape, that must rise from the touch-holes of the guns, even if the mouths project from the opening. Already it was possible from this lower story to shoot over the outer wall of the city ditch. But that itself could not be commanded from it. A second story lying above, whose rear was at first entirely open, has similar recesses; the openings

for the center of the gun point slightly downwards. Below the
one we however found a second one for each, directed towards
in the floor, by which when inclined position of the gun it
was possible to strike the city ditch. Remarks also are
two small U-shaped openings beside each of the upper embras-
res, which served for swamping the vicinity with muskets, and
the cannon of the embrasures reached somewhat farther, and
and the great guns of the crown of the wall should reach the
enemy before he took position before the walls of the city.

The efficiency of this bastion tower may have been compar-
atively good; for a series of similar ones exist, by which it
is attempted to increase the effect by development in details.
Particularly is the lower part, here filled, also hollow and
furnished with openings for muskets and small guns, in order
to command more effectively the city ditch itself, even when
while still farther cannon could not be placed in such towers,
and in the vicinity of the Spitaler gate, at the now so-called
Spitaler bastion. It consisted of a small square tower of

about 66 ft. diameter enclosed by a wall while, but entirely
filled with earth, on whose top about 39 ft. above the bottom
of the city ditch, but only about 15 ft. above the external
ground, a number of larger cannon found places behind massive
bracketwork, able to direct their fire on all sides. Such a
bastion now form the basis of the further development of the
mode of fortification. On numerous plans they first appear
on the illustration of the Paris Bastille, then we give later.
Marian's view of Lobosk shows similar round bastions, extending

there were or less independent, like that at Wismar. In it
the same fastness sense, not merely offering a platform one
with several stories, yet without being developed in form of
a tower, occupies the bastion of Montebellard, that is various
in fig. 9 (p. 38), is not solid but hollow, so that it affords
in the interior room for cannon.

bastion; not merely were other towers transformed; men also
with each thickness of walls, that they were held able to re-
sist even the balls from larger cannon mounted by the enemy
and, and thus to protect their own artillery. On the view of
Lobosk, that we gave in fig. 11 (p. 40), such a round power

for the mouths of the guns point slightly downward. Below these are however found a second one for each, directed downward in the floor, by which with inclined position of the gun it was possible to strike the city ditch. Remarkable also are the two small L-shaped openings beside each of the upper embrasures, which served for sweeping the vicinity with muskets, while the cannon of the embrasures reached somewhat farther, and the great guns of the crown of the wall should reach the enemy before he took position before the walls of the city.

The efficiency of this bastion tower may have been comparatively good; for a series of similar ones exist, by which it is attempted to increase the effect by development in details. Particularly is the lower part, here filled, also hollow and furnished with openings for muskets and small guns, in order to command more effectively the city ditch itself, etc. meanwhile still larger cannon could not be placed in such towers, and in the vicinity of the Spittler gate, at the now so-called Kocherts enclosure, is arranged a great circular bastion of a about 66 ft. diameter enclosed by ashlar walls, but entirely filled with earth, on whose top about 39 ft. above the bottom of the city ditch, but only about 13 ft. above the external ground, a number of larger cannon found places behind massive breastworks, able to direct their fire to all sides. Such bastions now form the basis of the further development of the mode of fortification. On rectangular plans they first appear on the illustration of the Paris Bastille, that we give later. Merian's view of Lubeck shows similar round bastions, standing there more or less independent, like that at Nuremberg. In the same indicated sense, not merely offering a platform but with several stories, yet without being developed in form of a tower, appears the bastion of Montbeliard, that is visible in Fig. 9 (p. 38), is not solid but hollow, so that it affords in its interior rooms for cannon.

However the tower was not to be supplemented entirely so rapidly; not merely were older towers transformed; men also built similar ones, like the semicircular mighty round towers with such thickness of walls, that they were held able to resist even the balls from larger cannon mounted by the besiegers, and thus to protect their own artillery. On the view of Lucerne, that we gave in Fig. 11 (p. 40), such a round tower

which we reprod-

stands at the foot of the hill on the left, which we regard
as the 18th century. The wide embrasures of
the upper story looked each separate but no point over a con-
siderable area, which is most cover, and since the embrasures
extend in a circle, and as the adjacent scope of each embrasure
from the area covered by the adjacent guns, then by this tower
was furnished a wide circle. Likewise the defensive platform
could receive guns, and if in spite of these the enemy had a
good reason, he could be attacked by men behind the bastions
with crossbows and muskets.

Note 186. From Mitt. d. K. K. Gent Comm. v. 17. 5. Boudier-
ve. 1867.

It may well say, if we consider the bastion at the Koberg
and the in Wurmberg, whose plan even falls in the time of
the emperor Maximilian I, who must be regarded for Germany as
the founder of the method for artillery, then the round towers
of Gisors, when we see that the two do not stand together,
that these two castles correspond with each other. Still about
the middle of the 16th century we believed, that the great
and possible elevation of the batteries must increase their
efficiency, and built the four round towers of Wurmberg
and, in order to place the guns as high as possible. One of
these towers stands almost directly outside the bastion menti-
oned, as if it were a command line, and this 20 to 30 years old
has structure forms the starting point and the basis of the
modern system of fortification, and the so prehistorically rep-
resented towers were indeed the last of their kind, so that no
one that reads of the military architecture of the Renaissance-
period, to whom they indeed belong, has occasion to speak
of them; so it should be excused that we have mentioned them
here. Tradition designates them as works of Urban, who in con-
spondence with the great Italian painters and sculptors ac-
counted himself with the art of fortification; but not only
is it entirely certain, that they were erected only after his
death by the architect F. Urban; his book on the art of fort-
ification also contains nothing similar; it stands so strongly
on the ground of the new time, that without going out of our
power and far beyond its limits, which is here not done, it
we must no longer consider it.

186. Development of Walls not intended for Great Cannon.

stands at the foot of the hill on the Limat, which we reproduce in Fig. 139¹⁸⁶ at a larger scale. The wide embrasures of the upper story allowed each separate gun to point over a considerable area, which it might cover, and since the embrasures extend in a circle, and as the sidewise scope of each reaches into the area covered by the adjacent guns, then by this tower was dominated a wide circle. Likewise the defensive platform could receive guns, and if in spite of these the enemy had come nearer, he could be attacked by men behind the battlements with crossbows and muskets.

Note 186. From Mitt. d. K. K. Genl. Comm. z. Erf. d. Baudenkmal. 1867.

We may well say, if we consider the bastion at the Kocherts enclosure in Nuremberg, whose plan even falls in the time of the emperor Maximilian I, who must be regarded for Germany as the founder of the method for artillery, than the round towers of Lucerne, when we see that the two do not stand together, that these two principles contend with each other. Still about the middle of the 16th century men believed, that the greatest possible elevation of the batteries must increase their efficiency, and built the four mighty round towers of Nuremberg, in order to place the guns as high as possible. One of these towers stands almost directly beside the bastion mentioned, as if it must command this, and this 20 to 30 years older structure forms the starting point and the basis of the modern system of fortification, and the so pretentiously represented towers were indeed the last of their kind, so that no one that treats of the military architecture of the Renaissance period, to which they indeed belong, has occasion to speak of them; so it should be excused that we have mentioned them here. Tradition designates them as works of Dürer, who in correspondence with the great Italian painters had thoroughly acquainted himself with the art of fortification; but not only is it entirely certain, that they were erected only after his death by the architect H. Unger; his book on the art of fortification also contains nothing similar; it stands so strongly on the ground of the new time, that without going out of our problem and far beyond its limits, which is here our topic, that we must no longer consider it.

150. Development of Walls not intended for great Cannon.

150. Development of Walls not intended for great attacks.

Until at the close of the 15th century, and even in the 16th, however important the development of the system of artillery had become, this had not yet reached the exclusive character of the artillery, that preferably served for separate works, like the bastions mentioned and round towers, and then the walls of enclosures, still the former principal wall rising behind these always retained its character of strength, that with the crossbow, which had retained her importance at least until the introduction of the steel bow and arrowed crossbows for attacking, might suffice greatly nearly as well as the musket, although under Maximilian I also the common musket as well as the somewhat heavier wall guns first became effective and reliable weapons in war. By the development, which both the crossbow as well as the musket had taken, also a transformation of the wall with its defensive galleries had become necessary, for which preparation had long been made. Already with the close of the 15th century by the introduction of the crossbow, the battlements had properly lost their importance. In spite of the added wooden shutters, etc. the above rise in the verticals, there was already no longer any ground for the battlements, but the walls were now to be built as solid as possible. After no attention could longer be paid to this, to receive with the sword at the open breastwork and approach, and enemy clambering over the wall or on towers rolled up, or to still with toll and necessity, creating scenes of boiling water over the breastwork, or through slots down on the enemy at the foot of the wall, the form of battlements no longer had any importance. Already the shutters, when and where they may have first appeared, had removed the importance of the battlements, and it is merely an indication of how conservative the mind was, that this form was still retained for castles, since men saw in it just the characteristic of military architecture.

In the buildings of the crusaders we therefore already saw instead of battlements openings like windows and slots in the masonry within the wall beneath the crenel. But first with the close of the 15th century in Germany the battlements became more rare, and in their places occurred in the defensive buildings openings like windows, but also slots in the deep corners.

150. Development of Walls not intended for great Cannon.

Until at the close of the 15 th century, and even in the 16 th, however important the development of the system of artillery had become, this had not won the exclusive supremacy. Besides the artillery, that preferably served for separate works, like the bastions mentioned and round towers, and then the walls of enclosures, still the former principal wall rising behind these always retained its garrison of archers, that with the crossbow, which had attained new importance at that time by the introduction of the steel bow and stronger cranks for straining, might suffice pretty nearly as well as the muskets, although under Maximilian I also the common muskets as well as the somewhat larger small guns first became effective and reliable weapons in war. By the development, which both the crossbow as well as the musket had taken, also a transformation of the wall with its defensive galleries had become necessary, for which preparation had long been made. Already with the close of the 12 th century by the introduction of the crossbow, the battlements had properly lost their importance. In spite of the added wooden shutters, of the slots made in the verticals, there was already no longer any ground for retaining this form of protection for the archers standing behind it. After no attention could longer be paid to this, to receive with the sword at the open breastwork the approaching enemy clambering over the wall or on towers rolled up, or or still with toil and necessity, casting stones or boiling water over the breastwork, or through slots down on the enemy at the foot of the wall, the form of battlements no longer had any importance. Already the shutters, when and where they may have first appeared, had removed the importance of the battlements, and it is merely an indication of how conservative the entire world is, that this form was still retained for castles, since men saw in it just the characteristic of military architecture.

In the buildings of the crusaders we therefore already saw instead of battlements openings like windows and slots in the passage within the wall beneath the crown. But first with the close of the 15 th century in Germany the battlements became more rare, and in their places occurred in the defensive galleries openings like windows, but also slots in the deep cour-

courses of the wall. According to the location of the defense
five galleries were there enclosed by walls, not merely over-
the but inside. A very interesting example was found on the
now unfortunately destroyed outer wall around the place of arms
before the latter date in Warrington, whose section and later-
and elevation of the wall are given in the attached plans.

Note 127. The plan follows later (in Chapter 12).

We then have there at M the inner city wall, at N the outer
or enclosure wall, before it the city ditch and at O is the
external retaining wall of the latter. The wall M was built
according to the ordinary system, yet had only 16 ft. height
above the street level, since in excavating the ditch, that
first occurred long after the erection of the wall, a part of
the material from it was employed to raise the ground inside
and outside, so that a portion of the city wall came to be in
the ground. The defensive gallery was open toward the city,
had a thin ashlar wall on the exterior, yet no battlements
or formal windows. We believe that it is to be assumed, that
for elevating the wall originally was still left a small ditch.
While there around the city the enclosure wall even as the old-
one of the 15th century was but little higher than the top
of the city ditch, just as much as was necessary for the guns,
at the places of arms it was raised to the same height as the
inner wall. The retaining wall itself was composed of several
walls standing before each other, in order to lessen the ef-
fect of the cannon fired against it. Each of these walls con-
sisted of plates and arches, that were so arranged, that they
did not touch each other. The outermost wall formed only one
facing irregularly pointing in the separate stones. In this
manner was it possible not only to give a certain elasticity
to the wall backed with earth, but also maintain its position
at whatever place the enemy might ever attempt to breach it
by shooting.

Above the ground the wall had great niches inside, in each
of which was found a smaller one with an embrasure. (B). The
defensive gallery A, furnished with walls and windows at con-
siderable intervals, and a clear width of 9.5 ft., so that it might receive
small guns. But that men always still placed vines on a long-
ermy wooden structure on the exterior prevents from the fact,
that outside each along two cannons project from the wall and

courses of the wall. According to the location of the defensive galleries where these enclosed by walls, not merely outside but inside. A very interesting example was found on the now unfortunately destroyed outer wall around the place of arms before the Laufer gate in Nuremberg, whose section and internal elevation of the wall are given in the adjacent plate.

Note 187. The plan follows later (in Chapter 13).

We then have there at M the inner city wall, at N the outer or enclosure wall, before it the city ditch and at O is the external retaining wall of the latter. The wall M was built according to the ordinary system, yet had only 16 ft. height above the street level, since in excavating the ditch, that first occurred long after the erection of the wall, a part of the material from it was employed to raise the ground inside and outside, so that a portion of the city wall came to be in the ground. The defensive gallery was open toward the city, had a thin ashlar wall on the exterior, yet no battlements but formal windows. We believe that it is to be assumed, that for elevating the wall originally was still left a small ditch. While then around the city the enclosure wall even at the close of the 15 th century was but little higher than the top of the city ditch, just as much as was necessary for the guns, at the places of arms it was raised to the same height as the inner wall. The retaining wall itself was composed of several walls standing before each other, in order to lessen the effect of the cannon fired against it. Each of these walls consisted of piers and arches, that were so arranged, that they did not touch each other. The outermost wall formed only one facing irregularly bonding in its separate stones. In this manner was it possible not only to give a certain elasticity to the wall backed with earth, but also maintain its position, at whatever place the enemy might ever attempt to breach it by shooting.

Above the ground the wall had great niches inside, in each of which was found a smaller one with an embrasure, (B). The defensive gallery A, furnished with walls and windows at both sides, had a clear width of 9.8 ft., so that it might receive small guns. But that men always still placed value on a temporary wooden structure on the exterior results from the fact, that outside each niche two corbels project from the wall and

...and the other two holes for doors, so that a ...
work, as at G, could be constructed, that not only afforded
...the like to be dropped on the enemy, who undertook to get in
the old way at the foot of the wall; for so long as an attack
made in the old manner was still conceivable, must one also
be able to defend himself against it. An enemy that had prof-
an easy the upper part of the outer remaining wall of the di-
top, and had thrown the mass of earth x y & down into the di-
for like x'y'z', would already have had a quite convenient w
way into the latter, and thereby one to the foot of the wall.
from the defensive gallery A above this could not be prevented;
the effect of its small guns was here at a distance, about 40
within the natural lines of fire of the B outward could be
sweep the opposite half of the ditch as about x'y', as well as
x y above the ditch, although the latter offered some diffi-
alties from the construction of the entrance. The row C of
musketeers was therefore of greater importance, since they had
a far greater field for their shot; they could still strike
beyond d of the line of fire A. The musketeers could sweep a
anything lying within reach from B, and alone hit the half of
the ditch on this side behind the line of fire B; they alone
could command the foot of the wall. Although the gallery no
longer existed, since the entire work was torn down about 10
...
holes also still at the middle of the standing towers the fur-
ture, from which these external galleries were accessible. On
the similar works of the Stiller side, which were fortunately
are not yet removed, although overgrown, are still found shapen-
ding from instead of stone corbels, on which a similar con-
struction could be erected. While the lower part, thus the ni-
ches B, was open inside, so that an enemy who had burst thro-
ugh the gate, and had reached the inner court, could not con-
ceal himself therein, so long as he could still be fired on
from the inner city wall; if the lower defensive gallery also
inside, since it had connections at the sides with the defen-
...
in fighting from all sides the enemy, that had entered.
We close the consideration of wall with the example of an

within each one are found two holes for bars, so that a framework, as at C, could be constructed, that not only afforded space for a row of musketeers, but also permitted stones and the like to be dropped on the enemy, who undertook to act in the old way at the foot of the wall; for so long as an attack made in the old manner was still conceivable, must one also be able to defend himself against it. An enemy that had broken away the upper part of the outer retaining wall of the ditch, and had thrown the mass of earth $x y z$ down into the ditch like $x'y'z'$, would already have had a quite convenient way into the latter, and thereby one to the foot of the wall. From the defensive gallery A alone this could not be prevented; the effect of its small guns was here at a distance, about within the natural lines of fire c d. From B outward could be swept the opposite half of the ditch as about $x'y'$, as well as $x y$ above the ditch, although the latter offered some difficulties from the construction of the entrances. The row C of musketeers was therefore of greater importance, since they had a far greater field for their shots; they could still strike beyond d of the line of fire A. The musketeers could sweep anything lying within reach from B, and alone hit the half of the ditch on this side behind the line of fire b; they alone could command the foot of the wall. Although the gallery no longer existed, since the entire work was torn down about 10 years ago, there were found the outside corbels and the beam holes also still at the middle of the standing towers the turrets, from which these external galleries were accessible. On the similar works of the Spittler gate, which more fortunately are not yet removed, although changed, are still found suspending irons instead of stone corbels, on which a similar construction could be erected. While the lower part, thus the niches B, was open inside, so that an enemy who had burst through the gate, and had reached the inner court, could not conceal himself therein, so long as he could still be fired on from the inner city wall; if the upper defensive gallery also inside, since it had connections at the sides with the defensive galleries of the inner wall, so that it must participate in fighting from all sides the enemy, that had entered.

We close the consideration of wall with the example of an entirely light and small enclosure, such as we find tolerably

With respect to the new law, the committee, which is a
 also having been formed, has been working on the
 matter, and, while this committee is in session, the
 committee, and it is the duty of the committee, to
 the committee of the new law, the committee is the
 and also having been formed, the committee is the
 committee is the committee, which is the committee,
 represented by the committee. In this manner, the
 the committee is the committee, and the committee
 of the committee is the committee, as well as the
 in the committee, which is the committee.
 the committee is the committee, which is the committee.

often around isolated farm courts, cemeteries, etc., as we also likewise frequently see built small outworks, connecting works, etc., walls with scarcely 1.6 ft. thickness, mostly but little more, and 10 or at most 13 ft. high. Fig. 140 ¹⁸⁸ shows the section of such a wall in S. Martin on the Dux (Carinthia), and also teaches how there in a simple way a covered defensive gallery is formed, from which one could receive guests, who approached without invitation. In this manner indeed during the entire middle ages was transformed every simple enclosure of any area into a fortress, as soon as it became necessary to defend one's self behind it.

Note 188. From a publication of the "Wiener Bauhütte".

Chapter 12. Gates.

151. Gates of the 11 th and 12 th Centuries.

To each fortress, castle and city, the gate formed the natural entrance, through which friend and enemy sought to enter. However willingly men permitted the former, so the more certainly would they exclude the latter, and thus men heaped around the gate obstructions of every kind and means of defense against an attack. All roads led only to the gate, while around the walls the vicinity was made as impassible as possible by earthen walls and ditches. Therefore the gate was also the most natural point of attack; but therefore also were there the best means of defense, so that also the attack there became more difficult, than at any other place. Each gate was a castle in itself. We refer to what we have said previously on their access and gates in the description of different castles. As there men added one obstruction after another, and beginning far outside, arranged one work after another. Similar was the case for cities, where far outside one outwork was built before the other, each of which was a larger or smaller castle, only differing from an isolated fortress in that the traffic passed through it. In Fig. 131 (p. 191) we have already illustrated the walls of Frankish Salzburg, as they are shaped beside the entrance gate, thus at the same time giving the side elevation of the gate; here we represent (in Fig. 141) the external elevation of the gate towers. We must doubtless assume, that before the wall and beyond the ditch additional external lines protected the castle from the ridge of the hill, each of which had its gate, and that an outer castle lay there, which one must pass through to reach the gate of the castle itself. Meanwhile we can look away from this and regard the opening leading through the external wall as the first gate.

As of almost all early wooden constructions also no vestige of this is longer preserved. Yet we place before ourselves the simplest possible closure. Over the ditch led a bridge; this bridge must not be a permanent one; it must easily be quickly removable entirely or at least in part, so that passage could be interrupted, if the last defenders of the outworks had retreated, and the enemy would enter. The bridges were therefore of wood almost without exception; only occas-

occasionally are found stone piers on which was placed the wooden bridge. Such wooden bridges could easily be broken down, and if time no longer sufficed for this, could be destroyed by fire. Meantime indeed, if a combat arose on a bridge, so that the time was too brief for that, certainly men had therefor already conceived a construction at a very early date, by which in a moment a portion of the bridge could be removed, and thus a gap could be suddenly created, men later employed for this drawbridges. The part directly before the gate was removable and could be raised.

But unfortunately there is lacking for us reliable statements of their existence in earlier, but also just on their occurrence at any definite later time. Therefore we can blame nobody, if he believes, that this so important a means of security must have already existed early, and might doubt, that any one is right, who assumes that only late did drawbridges come into use.¹⁸⁹ We should like to believe, that there and then at some definite building they did not exist, but that they should not be employed at all, we can believe impossible, and if also in Fig. 131 we have not shown a draw or shore bridge, we have them intentionally in various illustrations, to show that we believe in their existence in the early time, but therefore without wishing to assert, that this was the case just in the example, to which we have added an attempt at restoration. But still less would we desire to say, that it must have been just so, as we have restored it after later examples. Intentionally in some representations have we placed the movable part of the bridge not at the end, but in the middle of the bridge, and also have given several movable parts to one bridge (Fig. 39, p. 79).

Note 189. The enclosure of the Severin gate at Cologne, from the beginning of the 13th century, leaves no doubt, that there was arranged a drawbridge. (See Weillhose, pl. 7).

After this digression, if we return to our Salzburg, then in Fig. 131 (p. 191) the bridge first leads us into a little forecourt, that is surrounded by walls with battlements. Also nothing of this forecourt exists, but remains of later buildings permit the conclusion, that they occur only in place of earlier ones. In any case an entrance into the passage behind the wall existed there. The proper gate to the castle is found

in the tower, that externally, now where nothing more of the outwork is to be seen, presents the appearance represented in Fig. 141. Indeed it now only extends to the line A B, the upper part being restored. The gate was closed by thick wooden leaves, behind which bars offered further security. The interior of the tower is unfortunately entirely destroyed, so that it cannot be determined with certainty, whether a portcullis existed.

If an enemy had reached this, then the way stood open into the first court of the castle. The tower had not merely a great gate at its rear corresponding to the entrance gate, but also little doors at the sides. Certainly the defenders would have placed themselves in a circle around the tower, in order by personal combat to defend against the enemy the exit from the tower, and at least to hold him fast in the tower hall, whose formerly existing vaults doubtless had an opening, through which the garrison of the tower could shoot from above the enemy held fast in the hall, and pour liquids on him.

The entrance to the upper stories of the tower, as in the principal towers, was placed over the hall, only possible by means of a ladder; it lay at the side at the height of the crown of the hall, but did not open on that. To produce a connection of the two defensive galleries through the tower must be constructed movable wooden bridges, that could be moved aside, so that the tower stood just as independently as a principal tower, and the garrison could maintain itself therein, even if the enemy had penetrated into the court and even had taken the wall. It originally numbered between the lower hall and the defensive platform three other stories, and the defensive platform allowed, if we assume that the roof above it was furnished with slots, the garrison to hold out in a formal siege, and could greatly injure the enemy, until the tower had fallen.

If we cannot also consider the frequently very peculiar plan of the entrance of every castle, yet we must still recall that of Landeck, which in Figs. 94 and 96 (p. 157, 158) we have represented at a greater scale in connection with the principal tower, as on our general view of the castle in Fig. 31 (p. 71). We there called attention to the way, that led from work to work, from gate to gate into the castle court, and i

its defensive measures, if we regard the construction of the
 forts with houses as belonging to the century from the 13th to
 the 15th centuries, and not as additions of a later time.
 In general was sought, so far as it was usually possible.

in the case of the shot, cast and pouring of the defenders,
 and thus to carry the road to the gate along the fortified wall
 and past as many towers as possible. An example of such a long
 route into the gate itself is afforded by the entrance to the
 gate, that great fortress of the heights of S. John, that we
 given there (Fig. 24 and the view (Fig. 25), that we follow
 here in Fig. 24. 190 with an entered plan of the entrance.

Note 190. From Rev. p. 17.

we find simply at not quite inaccessible places in a tower at
 A a small portal by which one entered, which certainly was a
 led into a vaulted hall and through this into a long pas-
 sage B like a tunnel, partly cut in the rock, partly built of
 masonry, in which a few men could make all passage impossible.
 At B one had ascended as high as to find himself under the
 open sky. The way then led again into a little hall before
 the tower C to D, where he again passed underground forward,
 in order at E to reach a gate provided with a portcullis, and
 then under the building at F into the court. It is easily un-
 derstood, how difficult this passage was to fight through, but
 also just as readily, how slowly a garrison outside could re-
 treat through the narrow passage, but how slowly also they
 could pass out, if they desired to get outside. The entire

152. Bridge Gates.

and in connection with stone bridges. We have in Germany sev-
 eral monumental bridges of an earlier time, of which we regard
 the bridge at Regensburg as the finest and most im-
 portant; however it is just at the gate leading through
 a tower is somewhat less developed in its further plan in con-
 sequence of the small space at command, than in the case at
 some French bridges.

its defensive measures, if we regard the construction of ash-lars with bosses as belonging to the change from the 12 th to the 13 th centuries, and not as additions of a later time.

In general was sought, so far as it was usually possible, to keep the way into the gate itself as long as possible within the reach of the shots, casts and pourings of the defenders, and thus to carry the road to the gate along the defended wall and past as many towers as possible. An example of such a long route into the gate itself is afforded by the entrance to the Krak, that great fortress of the heights of S. John, that we treated in Art. 89 (p. 107). The reader will compare the plans given there (Fig. 54 and the view (Fig. 55), that we follow here in Fig. 142 ¹⁹⁰ with an enlarged plan of the entrance.

Note 190. From Rey, p. 47.

We have little information concerning non-monumental works; we find simply at not quite inaccessible places in a tower at A a small portal by which one entered, which certainly was observed from a bay over it, and could be prevented. The portal led into a vaulted hall and through this into a long passage B like a tunnel, partly cut in the rock, partly built of ash-lars, in which a few men could make all passage impossible. At b one had ascended so high as to find himself under the open sky. The way then led again into a little hall before the tower C to B', where he again passed underground further, in order at F to reach a gate provided with a portcullis, and then under the building at I into the court. It is easily apparent, how difficult this passage was to fight through, but also just as readily, how slowly a garrison outside could retreat through the narrow passage, but how slowly also they could pass out, if they desired to act outside. The entire protection consisted in the ease of holding the narrow passage.

152. Bridge Gates.

A special development was received by gates, where they stood in connection with stone bridges. We have in Germany several monumental bridges of an earlier time, of which we regard the Danube bridge at Regensburg as the greatest and most important; however it is just at it that the gate leading through a tower is somewhat less developed in its further plan in consequence of the small space at command, than is the case at some French bridges.

Yearly we refer to the "Pont" in Viollet-le-Duc's Dictionnaire de l'Architecture, t. VII, p. 171, 172, 173 (et seq.), and we reproduce in Fig. 143 the date tower of the Salazar bridge of Cahors, lying opposite the city and erected on the other bank of the river, which was built in 1251, and indeed is seen from the outer side leading toward the city. The portion here given thus forms a kind of bridge-head, which directed its lines of defense against access by land as well as by water.

Note 1st. From Viollet-le-Duc, Vol. V, p. 227 et seq.

It is entirely covered by a second house A, in which lies the access to the bridge, that one entered however, not in its axis but from both sides from a road extending along the bank of the river. The approach on this road is commanded at each side by the doubled wall of the bridge head, that for the case of high water is furnished with openings. One enters the building A from both sides through pointed arched gates with portcullises, above which are arched bays. In the half-tower A one first turns at a right angle and then reaches the vestibule of the bridge, from toward the city is closed by the tower. Over the gate leading into the tower is again placed a bay; likewise such are on the sides to prevent the enemy, who had taken the outer wall of the bridge head, from undermining the tower. A similar tower, but without the bays, is found at the middle of the bridge, a third being at the city side with behind it again a lower tower. A description appears to have never existed, by which the passage could be interrupted.

157. Gates in City Walls.

Particular attention is claimed by the gates of the city wall with its ditch surrounded the city, the entrance to it were defended by works of masonry, that are designated as "bastions". Bastions of these earlier date called bastions more has come down to our times. At the same time that the stone wall was set on the earth wall, the ditch was also widened. These bastions still exhibited remains of the old on the second use now first destroyed; but essentially these bastions in their former state as the 13th, their upper parts in part re-

Meanwhile we refer to the Art. "Pont" in Viollet-le-Duc's *Dictionnaire raisonnee de l'Architecture*, etc. (Vol. 7, p. 220 et seq.), and we reproduce in Fig. 143 ¹⁹¹ the gate tower of the slender bridge of Cahors, lying opposite the city and erected on the other bank of the river, which was built in 1251, and indeed is seen from the outer side leading toward the city. The portion here given thus forms a kind of bridge-head, which directed its lines of defense against access by land as well as by water.

Note 191. From Viollet-le-Duc. Vol. 7. p. 237 et seq.)

It is entirely covered by a strong house A, in which lies the access to the bridge, that one entered however, not in its axis but from both sides from a road B extending along the bank of the river. The approach on this road is commanded at each side by the doubled wall of the bridge head, that for the case of high water is furnished with openings. One enters the building A from both sides through pointed arched gates with portcullises, above which are arranged bays. In the building A one first turns at a right angle and thus reaches the vestibule of the bridge, that toward the city is closed by the rectangular tower, through which one comes on the bridge proper. Over the gate leading into the tower is again placed a bay; likewise such are on the sides to prevent the enemy, who had taken the outer wall of the bridge head, from undermining the tower. A similar tower, but without the bays, is found at the middle of the bridge, a third being at the city side with behind it again a lower tower. A drawbridge appears to have never existed, by which the passage could be interrupted.

153. Gates in City Walls.

Particular attention is claimed by the gates of the city wall of Cologne. Already at the time when yet the mere earth wall with its ditch surrounded the city, the entrances to it were defended by works of masonry, that are designated as "gate castles". Certainly of these earlier gate castles nothing more has come down to our time. At the same time that the stone wall was set on the earth wall, the gates were also rebuilt. These indeed still exhibited remains of the old in the structures now first destroyed; but substantially these belonged in their later parts to the 13th, their upper parts in part fi-

lived so far in the century.

... of the century. In the second the entrance is accompanied by
French system. In the second the entrance is accompanied by
adorned by two rather low wings. An example of such is the
entrance date. In the second the entrance is accompanied by
which is presented by the person date. The French date
most indeed in its lower parts be a remnant of the date tower
of the 12th century, but in its upper portion essentially
belongs to the 13th century. (See the adjacent plate). Larger
windows must we not conceive at that time on the exterior, but
merely slots. Of the wooden projection over the gateway
arch still existed the iron cramps by which it was fastened
to the masonry.

Note 192. See *Wien*. Plates 37 - 40.

... of the century. In the second the entrance is accompanied by
those roofs; but since then such were nowhere placed on milt-
tary structures, at least already in Cologne at the middle of
the 15th century, we shall leave it to the reader to conceive
them. In general in the 12th and 13th centuries, there is
... of these, between which is found the
entrance hall. This is no appearance peculiar to Cologne. Thus
the castle and the city wall of Caracorum exhibit several
set close together. Viollet-le-Duc notes that in Italy of Car-
cassonne, that we can merely refer to him, in which we certa-
inly must also partly leave it to him to answer for the dates,
that he gives not only for the general plan, but also for the
details of construction.

Note 193. See *Viollet-le-Duc*.

Note 194. We might doubt, but in fact it so far surpassed
everything offered in Germany at the same time, as it must be
according to his drawings. But Viollet-le-Duc in his splendid
publication of the fortifications of Caracorum in the Archi-
ves de la Commission des monuments historiques, what here the
scope of our work unfortunately does not permit, has shown
everywhere the existing condition, and has corrected there-
with the attempts at restoration, and he continued this attempt
in the *Monuments*, which we willingly acknowledge. But we

first to the 14 th century.

The gates of Cologne were preferably erected after two different systems. In one a square tower formed the gatehouse, adjoined by two rather low wings. An example of such is the Friesen gate. In the second the gatehouse is accompanied by two externally projecting semicircular towers, an example of which is presented by the Gereon gate. The Friesen gate ¹⁹² must indeed in its lower parts be a remnant of the gate tower of the 12 th century, but in its upper portion essentially belongs to the 13 th century. (See the adjacent plate). Larger windows must we not conceive at that time on the exterior, but merely slots. Of the wooden projection over the gateway arch still existed the iron cramps by which it was fastened to the masonry.

Note 192. See Wiethöse. Plates 37 - 40.

It is hard for us to draw the tower and both side wings without roofs; but since then such were nowhere placed on military structures, at least already in Cologne at the middle of the 15 th century, we shall leave it to the reader to conceive them. In general in the 12 th and 13 th centuries, there is always arranged either one tower, through which the entrance passes, or there are two of these, between which is found the entrance hall. This is no appearance peculiar to Cologne. Thus the castle and the city wall of Carcassonne exhibit several gates, that lead in between two projecting semicircular towers set close together. Viollet-le-Duc treats ¹⁹³ so fully of Carcassonne, that we can merely refer to him, in which we certainly must also partly leave it to him to answer for the dates, that he gives not only for the general plan, but also for the details of construction.

Note 193. See Viollet-le-Duc.

Note 194. We might doubt, that in fact it so far surpassed everything allied in Germany at the same time, as it must be according to his drawings. But Viollet-le-Duc in his splendid publication of the fortifications of Carcassonne in the Archives de la Commission des monuments historiques, what here the scope of our work unfortunately does not permit, has given everywhere the existing condition, and has contrasted therewith the attempts at restoration, and he continued this attempt in his Dictionnaire, which we willingly acknowledge. But we

as work of the military architecture of the 12th century.
 we might only acknowledge as such of the 12th century. If we
 are also sufficiently interested concerning the conditions of
 the civilization of that time, to know that Germany was then
 it seems to us also inconceivable, that it should not always
 have imitated, what was first then the "fashion", but first of
 says have waited a hundred years, until the fashion had become
 sufficiently old, to imitate it, although it saw then progress

the 12th century, the German date in any case is to be reck-
 oned with the most interested, whose class we give in this.
 145 to 147, as well as an attempt at restoration in plan and
 section. 195. The architectural for Cologne is the assumption, that
 these priors did not last over the distance to the dates as
 elsewhere, but always came away enclosed on both sides by walls
 and defended against the ditch. Indeed we assume in view of
 the enclosure of the German date some contribution only by
 the favor of our sources; but there already early before the
 proper date buildings must have stood walled outwards outside
 the ditch, that by earth and masonry walls were connected with
 the gate building itself, so that this plan is yet not entire-
 ly improbable, even if also varying somewhat from the rule.
 In the elevation in fig. 145 we have placed roofs on steeple-
 top, which we assume to be justified everywhere, even also
 in Cologne, so far as our existing plans extend, but here
 never for durability of the roofs, though the tower platform
 was not vaulted underneath, as to be seen from the section in
 fig. 146.

Note 195. From Kithore. Plates 41, 42.

What indeed interests everyone, who has pushed himself with
 the military architecture of the middle ages, is the series
 of days arranged below the battlements, and that part in it
 important effect at the moment, when the enemy has already
 approached near and storm against the gate. However between
 the two towers were visible armed men in armor, who
 even more than these have secured the place directly before

Might assume a great part to be essentially later; the greatest portion of his very probable restorations, that he gives as works of the military architecture of the 12 th century, we might only acknowledge as such of the 13 th century. If we are also sufficiently instructed concerning the conditions of the civilization of that time, to know that Germany was then under the influence of the superior French civilization, then it seems to us also inconceivable, that it should not always have imitated, what was just then the "fashion", but first always have waited a hundred years, until the fashion had become sufficiently old, to imitate it, although it saw then progress made in the meantime.

Of these gates of Cologne, that chiefly still belonged after the 13 th century, the Gereon gate in any case is to be reckoned with the most interesting, whose plans we give in Figs. 145 to 147, as well as an attempt at restoration in plan and section. ¹⁹⁵ Characteristic for Cologne is the assumption, that these bridges did not lead over the ditches to the gates as elsewhere, but always causeways enclosed on both sides by walls and defended against the ditch. Indeed we assume in view of the enclosure of the Severin gate this contribution only by the favor of our source; but there already early before the proper gate buildings must have stood walled outworks outside the ditch, that by earth and masonry walls were connected with the gate building itself, so that this plan is yet not entirely improbable, even if also varying somewhat from the rule. In the elevation in Fig. 145 we have placed roofs on structures, which we assume to be justified everywhere, even also in Cologne, so far as our starting points extend, but were never for durability of the roofs, though the upper platform was not vaulted underneath, as to be seen from the section in Fig. 146.

Note 195. From Niehase. Plates 41, 42.

What indeed interests everyone, who has busied himself with the military architecture of the middle ages, is the series of bays arranged below the battlements, and that permit an important effect at the moment, when the enemy has already approached near and storms against the gate. However between the two towers were visible added wooden structures, which even more than these bays secured the place directly before

the gate, but the bay itself made them partly superfluous. As for the form of the slot, then also that given by us after Wietase is not that of the 13th century, which was not widened externally, but had its narrowest place outside.

We add here to the Gereon gate also the plan of the Pantaleon gate (Fig. 144),¹⁹⁶ since there both side towers of the gate structure are flat and open in the rear. We have dotted the plan of its internal court. Furthermore it requires only a glance at this to recognize, still more than at the Gereon gate -- and for just this we reproduce it -- that the building as shown here was either not completed or was mutilated later. Both the gates of Carcassonne as well as German buildings of similar plan show everywhere, that the towers behind the semicircle have a rectangular body with the depth of the gate building. Thus may it have been intended or executed in Cologne, so that the internal court on the right side of the observer and dotted in Fig. 144 even shows the plan of the tower.

Note 196. From the same. Plates 14, 15.

We had opportunity to go yet farther into a series of details and to show, how these were connected with the mode of fighting and of reach of the weapons, etc. But we have had to say already in the description of other objects, such as the gate structures, what was to be said there. Now a book like this certainly seems not only for reading, but also frequently enough for consultation, and the reader, who always consults, might readily remain ignorant of what relates to the object. Therefore we must not fear repetition occasionally. Meantime we still believe we must not go too far in this, and request the reader to examine on such occasions what is said in former passages of this Chapter.

About to the same time as the Cologne gates also belong the Marschier gate at Aix-la-Chapelle (Figs. 148, 149),¹⁹⁷ which perhaps in certain parts is yet somewhat older than these.

Note 197. From Bock, F. -- The modern name of "Marschier gate" indeed originated from "Mistère portol", as it was formerly called, (Porte des Messieurs or Nobles' gate); In the 12th century the gate was called Porta Porcetensis.

The plan shows two round towers set close together, a part of each being cut off in order to form in the ground story the passage between them, the rear half B being the proper g

gatehouse, which could be closed from the gate wings by a portcullis. The room A is built over above the ground story. Casting holes in the floor of this intermediate structure (Fig. 149) still permit a more effective defense. Permitted by this intermediate building, the tower character of the side parts was omitted in the upper parts, and the entrance body of the building was covered by a single roof. Indeed already in the 13 th century the roof was always merely provisional, that it could be removed, so that the great defensive platform could take part in the defense. The slots for shooting arranged in three rows over each other with their niches and the seats arranged therein indicate the second half of the 13 th century, on the other hand the capricious form at last assumed by the slots already denote the 15 th. Toward the city the upper story of the middle building has wide formal windows.

Entirely similar is the Vienna gate at Hainburg-a-D in lower Austria; only in this the unity of the mass of the building no longer appears.¹⁹⁸ But it is still clearly recognizable, that the substructure, the plan of both towers belong to the earlier time, and to the later time the upper portion in which these are connected with the middle rooms into a unified mass. Thus it may also be the case with the gate at Aix-la-Chapelle, as indeed also the Cologne tower was arranged on the site and with the use of older remains in the 13 th century. Therefore must also be studied the entire series of buildings. Also the designs of several gates at Carcassonne¹⁹⁹ must be included. They agree with the plans of the gates of Cologne, Aix-la-Chapelle and Hainburg in so far, that we cannot doubt that an earlier building was their basis, just as the German ones mentioned, but also that we cannot hold them substantially earlier than these, as Viollet-le-Duc represents them.

Note 198. See Mitt. d. K. K. Cent. Comm. z. Erf. u. Verh. d. Baudenkmal. Year 15, p. 86.

Note 199. Viollet-le-Duc. Vol. 7. p. 317.

An interesting gate is that of the city of Friesach, of which we give in Figs. 150 to 155 the plan, a view of the condition that we found nearly 30 years since, as well as an attempt at restoration. It is substantially the same arrangement as at the gate of Salzburg. There may also have been a structure of the same time as a basis for the present one, but which

in its essential parts must go into this in the 14 th century. (See Figs. 131, p. 191, 141, p. 206). That we have drawn the tower no higher occurred in regard to the thickness of the walls; still we recall nothing to the contrary, if one wishes it higher. Noteworthy appears to us primarily the stone bridge, that indeed does not extend to the outwork of the tower, and as Fig. 150 shows, was only later lengthened to it, so that then a drawbridge was necessary; but still it could be of substantial use to the enemy. Manifestly the continual repairs, to which wooden bridges were exposed, men desired to avoid here. It is evidently from the plan, that the tower itself had its portcullis. We have assumed in the restoration, that a similar one was also on the outwork. Also the bars still exist, that were slid into the wall and again drawn out, and that could be placed against the gate leaves to increase their resistance. (Fig. 152).

154. Bayen Gate at Cologne.

Entirely derived from the special conditions it had to serve is the plan of the Bayen gate at Cologne (Figs. 155, 156),²⁰⁰ that we might attribute to the 14 th century. The southern point of the city extends not quite to the Rhine, but left open for passage along the bank the necessary wide strip of land between the water and the wall, so that one could also pass along the bank by the city of Cologne. Yet this passing traffic required oversight, and if necessary must also be interrupted at any time. But even so also the interest of the city required, that all those, who on land passed down the bank of the Rhine to Cologne, could enter the city just at this southernmost point. Therefore resulted the necessity for arranging an entrance gate there, but also at the same time a castle, that could entirely stop the way and command the Rhine so far, that it could make impossible the passage of hostile ships, and hinder their landing. It is self-evident, that any such castle was not merely a protection to the city, but also entirely adapted to control it, and to have at least a portion of it entirely in its power.

Note 200. From *Cölnner Thorburgen und Befestigungen*. 1880-1882. Published by Society of Architects and Engineers for Lower Rhine and Westphalia. 1883. Plate 3.

No doubt can remain, that this castle was already planned

at a very early time. In the 13 th century it found itself still in the hands of the archbishop, but passed in 1262 into the hands of the citizens, and was then rebuilt, where the principal part of the plan, the great square tower was restored, that was erected according to the system of the castle towers of the 11 th and 12 th centuries, and in extent equals the larger of those.

It has an external length and width of 39.4 ft., and at its foot on the north and south sides was also surrounded by the solidly built city wall about 4.3 ft. thick. The wall attached on the east side passed north across the shore road, completely barricading this, and united with a narrow wing building extended far into the Rhine, which bore the name of the "Ark". At the foot of this tower now lay at the south a forecourt, corresponding to the width of the city ditch and terminating it, before which lay yet a second,²⁰¹ since the ditch was doubled. Through these forecourts then the way led into the city at A, following the arrow and the dotted line. It appears scarcely doubtful to us, that already originally the connection of the shores at B was kept open by a gate, and that also at C existed an entrance to the city; in any case the requirements of traffic may have led soon to its construction. Originally no entrance to the tower existed, except that recognizable on our view, lying high above, to which one was drawn up from the crown of the wall and led down into the lower rooms. We are of opinion, that the central lower portion of the tower with its ashlar with bosses, together with the entrance, still belonged to the 12 th century, and that the entrance tower rose square to the height of the cornice, that now divides the octagon into two stories. There indeed stood the old defensive platform with its battlements, and a spire arose with dormers. After 1262 the castle passed into the hands of the city, and it may well have been largely destroyed by it, that first was necessarily repaired until the entirely new arrangement succeeded, for which also the tower might yet appear usable. Therefore it followed with the use of the same probably in the 14 th century, and certain ornamental transformations may have resulted from repairs of the 15 th century. But besides the tower of the gate buildings no longer is so much preserved, that we have been able to speak here of more

than the plan.

Note 201. Thus it follows that the original plan can still be determined from the enlarged later structure further south, that the original plan shows. Since the city ditches were always dry, thus never connected with the Rhine, and before the gates of Cologne were never bridges but always dikes, so we can regard the closing of the ditches on the south side as otherwise impossible, then by such an outwork enclosed by walls, through which the way led. However whether further outside a later outwork did not exist, as also before the other gates of Cologne, we shall not thereby regard as impossible.

Next to be repeated is it, that the Ark no longer remains; as appears from the old pictures, it must have been a highly interesting structure with many noteworthy peculiarities. The chief purpose seems to have been, to give the Rhine gate building as great a front as possible toward the Rhine, from which hostile vessels could be fired on, and could be stored. For the latter purpose also served the canal, that passed from the Ark over the Rhine stream to the right bank. Doubtless also we must assume, that buildings in the water or at least driven piles, etc., did not leave the entire width of the stream open for navigation, but compelled the vessels to approach the left bank closely in their course, so that they could follow this way only within reach of shot from this Ark.

The Rhine tower has become a mark of the city of Cologne by its characteristic external appearance. Already in the oldest view of Cologne, that we recall at the moment, in Holzel's "Cologne" we find it. It is also already in the 15th century it had none. Therefore we opposed the attempt in our illustration to place a roof also on this tower. May the fact that it had none be attributed to the circumstance, that in the 15th century it must have suffered repairs and small rebuilding? The small angle has with their little battlements at the beginning of the tower do not recall medieval architecture at all, and may have been so constructed in a still later time, as our drawing gives them.

An example of the ornamental development, such as it became in the 15th century in part for the military buildings in

than the plan.

Note 201. Thus we believe that the original plan can still be determined from the enlarged later structure further south, that Klethuse shows. Since the city ditches were always dry, thus never connected with the Rhine, and before the gates of Cologne were never bridges but always dykes, so we can regard the closing of the ditches on the south side as otherwise impossible, than by such an outwork enclosed by walls, through which the way led. However whether further outside a later outwork did not exist, as also before the other gates of Cologne, we shall not thereby regard as impossible.

Most to be regretted is it, that the Ark no longer remains; as appears from the old pictures, it must have been a highly interesting structure with many noteworthy peculiarities. Its chief purpose seems to have been, to give the Bayen gate building as great a front as possible toward the Rhine, from which hostile vessels could be fired on, and could be stopped. For the latter purpose also served the chain, that passed from the ark over the Rhine stream to the right bank. Doubtless also we must assume, that buildings in the water or at least driven piles, etc., did not leave the entire width of the stream open for navigation, but compelled the vessels to approach the left bank closely in their course, so that they could follow this way only within reach of shots from this ark.

The Bayen tower has become a mark of the city of Cologne by its characteristic external appearance. Already in the oldest view of Cologne, that we recall at the moment, in Rolevinck's *Fascicules temporum* of 1481, it appears without a roof. Thus we must indeed assume, that also already in the 15 th century it had none. Therefore we opposed the attempt in our illustration to place a roof also on this tower. May the fact that it had none be attributed to the circumstance, that in the 15 th century it must have suffered repairs and small rebuildings? The small angle bays with their little battlements at the beginning of the octagon do not recall mediaeval architecture at all, and may have been so constructed in a still later time, as our drawing gives them.

155. Eschenheimer Gate at Frankfort.

An example of the ornamental development, such as it became in the 15 th century in part for the military buildings in

Germany, is the round tower of the Hospitaller date of Frank-
fort-A-M (wid. 147), whose masonry again stands behind a pro-
tecting series of battlements, that is interrupted by four
round towers projecting still further. The round tower has a
square substructure, around which on the inside the defensive
gallery of the walls is carried on ever further projecting
corbels in circular form, corresponding to the round form of
the tower.

156. Stein Gate at Basel.

At the Stein Gate at Basel, whose plan we give in fig. 156.
Note 202. From F. Schuler in Mitt. d. K.K. Gent. Com. x.
Arch. u. Ethn. d. Förschungs. 1888. p. 128.

is protected by double walls, there is found at A an entrance
gate, which corresponds at B to an outer gate located outside
the enclosure, in exchange for which the entrance at C did not
not exist originally. The line C is the inner wall, B is
the outer or enclosure wall. To allow the flow of water with-
out interrupting the fortification, a masonry pier is built
on a rock in the middle of the bed for each, and from these
two piers are turned to the shore walls, through which the
water can flow, which is kept so high, that on reaching the
city it passes over a dam, so that boats coming there must
necessarily fall with the flood and be destroyed. However since
not always was a sufficient height of water to be counted on,
then men added also contrivances as a precaution. Fig. 156
shows the internal view of this work from the city side. We
see how the pier is perforated, as a passage just above the
water and corresponds to the opening for flow, in built in
wooden construction, and niches with slots for shooting allow
the reception with crossbow shots for those approaching on the
water. We see how a broad defensive gallery is constructed
on the crown of the wall by a projecting wooden structure, a
and how a turret on the pier commands the entire structure.
Such turrets for water and again the exits corresponding to
them at different parts of the city wall were of great impor-
tance for the resistance of so many cities on flowing water.
In Krefeld, where the two sides of the city separated by a
the piers are enclosed by a common wall, there must be con-

Germany, is the round tower of the Eschenheimer gate at Frankfurt-a-M (Fig. 147), whose masonry spire stands behind a projecting series of battlements, that is interrupted by four round turrets projecting still further. The round tower has a square substructure, around which on the inside the defensive gallery of the walls is carried on ever further projecting corbels in circular form, corresponding to the round form of the tower. On the outer side here project two octagonal turrets.

156. Stein Gate at Basle.

An architectural plan of a peculiar sort is shown by the Stein gate at Basle, whose plan we give in Fig. 158. ²⁰²

Note 202. From F. Schultz in Mitt. d. K.K. Gent. Comm. z. Erf. u. Erh. d. Boudenknole. 1868. p. 128.

Beside the mouth of a brook flowing through the city, that is protected by double walls, there is found at A an entrance gate, which corresponds at B to an outer gate located outside the enclosure, in exchange for which the entrance at C did not exist originally. The line C D is the inner wall, B E is the outer or enclosure wall. To allow the flow of water without interrupting the fortification, a masonry pier is built on a rock in the middle of the bed for each, and from these two arches are turned to the shore walls, through which the water can flow, which is kept so high, that on reaching the city it passes over a dam, so that boats coming there must inevitably fall with the flood and be destroyed. However since not always was a sufficient height of water to be counted on, then men added also portcullises as a precaution. Fig. 159 ²⁰³ shows the internal view of this work from the city side. We see how the pier is perforated, as a passage just above the water and corresponds to the openings for flow, is built in wooden construction, and niches with slots for shooting allow the reception with crossbow shots for those approaching on the water. We see how a broad defensive gallery is constructed on the crown of the wall by a projecting wooden structure, and how a turret on the pier commands the entire structure.

Such inlets for water and again the exits corresponding to them at different parts of the city wall were of great importance for the requirements of so many cities on flowing water. In Nuremberg, where the two sides of the city separated by the Pegnitz are enclosed by a common wall, there must be con-

constructed one of the most extensive plans of this kind, that on the whole and in its details is the more interesting to study, since inflow and outflow are very intelligently constructed, both in the inner line of walls as well as the outer one. It is unfortunate that the space allowed us requires, as for many other things, also forbids the presentation of more than one example of such a river gate.

157. Ostentatious Towers.

A group of peculiar gate buildings distinguished by rich & decorative ornament is presented by north Germany, particularly the Mark of Brandenburg, in characteristically constructed brick structures from the close of the 14th to the close of the 15th century. The ground for this peculiar treatment of military architecture must have been laid by the architectural activity of the emperor Charles IV, as it also forms the basis of the rich ornamental development, which characterizes the military buildings of Bohemia until in the 15th century. The highest development certainly falls far later, and if in Bohemia to the time of Wenzel and of Sigismund the most richly treated works belong, then in that of the Mark it is that of the Hohenzollerns, which gave the development of the cities such an impulse, that not merely strong buildings, but they could also erect ostentatious structures for their defense.

To the earlier works of this group we may assign the water gate at Tangermünde, whose outer side we give in Fig. 160.²⁰³ The great windows we must certainly conceive as omitted; certainly only slots were where they now are. The building consists of a square tower, against which was later built on the inside also a low gatehouse of equal size. Closed at top by a platform with battlements, the exterior is thereby very characteristically subdivided, so that the pointed opening of the gate stands within a depressed pointed niche with more than twice the height of the gate.

Note 203. From Adler, F. Mitt. Bock. Bauw. d. Preuss. Staat-Vol. 1. Pl. 39, p. 73. Berlin. 1862. -- Adler certainly assumes, based on some existing brick stamps, that the building first belongs to the time of 1470, in which we cannot agree with him. If the stamps be actually so late, then repairs may have been made on the building about that time.

We find such niches in France on buildings of the 13th and

14 th centuries, where they serve to form casting holes, through which the enemy at the foot of the wall could be pelted, and indeed they are used not merely on towers. Similar is the arrangement on the residence of the grand master at Marienburg. However as our gate has such small depth, that in the opinion of the architect it was not arranged for that purpose. Here it concerns only a special construction for the portcullis. Doubtless the latter was indeed better so arranged, that it could be drawn up inside the enclosing wall, for example as in Fig. 97 (p. 160). But this required, that either no gate leaves could exist, and only the drawbridge formed the closure of the gate before the portcullis, or that the walls should have such thickness, that the gate leaves should lie in the jambs of the gate. But where they extended back over the thickness when opened, the portcullis must be outside the leaves (Fig. 152). Since the wall must then be divided by a slot, extending lengthwise into two parts, an outer one lying before the portcullis, no longer having any purpose for the resistance of the building, and the inner one, between the two the portcullis was raised and dropped. This outer wall here and in other similar cases is simply omitted above the gate, so that the portcullis remained visible to the enemy, even when standing open. Later men must go still further, and simply allowed some hook-shaped projecting stones to project above each other from the face of the wall, in the angles of which the portcullis could be raised and lowered at sight of the enemy; thus for example on the western gate tower, the so-called "pointed tower" at Miltenberg-o-M, from the close of the 14 th century. Very characteristic already on the outer gate at Tangermunde is made the ornamental form of the battlements. On the frieze beneath the battlements are placed shields of arms, whose elongated form still recalls the beginning of the 14 th century. 204

Note 204. Those versed in heraldry will see at once, that they are set inclined. According to the rules of heraldry every shield shall be so placed, as it appears when the one fighting bears it on his arm, as it also particularly appears to the opponent against whom it is carried. (The case is otherwise, if two shields are combined and thus inclined toward each other as in Fig. 164). But the position appearing here

appears occasionally, also that on the floor in fig. 162, the
wall shows the same shape and construction.

Most of these same structures in the dark lanterns have
their entrance halls not within a tower. It is generally only
a very simple hall, that has a platform at the height of the
defensive gallery of the wall, at whose side it then placed
a tower, which commands and defends the gate.

Such a tower as that represented in fig. 161 is
beside the lantern date in lanterns, whose lower square
portion perhaps belongs to a still earlier time, but in any
case at latest to the 14th century, its sections cover 100-
sided portion however existing in the 15th century. The day
originally had open floor. The battlements with their narrow
verticals cannot possibly have been, as they are represented
in the illustration. It indeed received its present form by a
restoration in the 17th or 18th century, when men no longer
set any value on the form of the battlements.

architecture.
The square of the lantern date is of the same shape as the
square of the lantern date in fig. 161. This also may have been the lanterns.
square is the tower standing beside the lantern date in
fig. 162, whose elevation and section we give in fig. 163.
163. Both lower stories are round internally; the ground
story naturally originally had no entrance; the two upper
stories are square; above four battlements is then placed a mas-
sive cone as a roof, half covered by crossed wooden arches.
a building date is not fixed; we might therefore regard as a
such the change from the 14th to the 15th century. Indeed
of battlements appear at top slot-shaped windows (fig. 163-
er 1).

Just so is lacking the determination of a date for the round
in fig. 164 to 168. It is mentioned as existing in the
thirteenth of the 15th century, and thus may have been erected
at the close of the first century.

Note 208. From the same. Plate 40 and page 78.
It now has two entrances in the ground story, only one of
which is original, but certainly did not lead into the inter-

appears occasionally, also thus on the frieze in Fig. 162, while there the two lower shields are correctly placed.

Most of these gate structures in the Mark furthermore have their entrance halls not within a tower. It is generally only a very simple hall, that has a platform at the height of the defensive gallery of the wall, at whose side is then placed a tower, which commands and defends the gate.

Such a tower as that represented in Fig. 161 ²⁰³ standing beside the Hühnerdorf gate in Tangermünde, whose lower square portion perhaps belongs to a still earlier time, but in any case at latest to the 14 th century, its acpricious upper octagonal portion however falling in the 15 th century. The bay originally had open floors. The battlements with their narrow verticals cannot possibly have been, as they are represented in the illustration. It indeed received its present form by a restoration in the 17 th or 18 th century, when men no longer had any understanding of the forms of the earlier military architecture.

The octagonal Mühlen gate tower at Brandenburg, whose eight sides are likewise divided in blind windows like those of churches, is of 1401. Thus also may have been the battlements.

Square is the tower standing beside the Rathenower gate at Brandenburg, whose elevation and section we give in Figs. 162, 163. ²⁰⁵ Both lower stories are round internally; the ground story naturally originally had no entrance; the two next stories are square; above four pendentives is then placed a masonry cone as a roof, held together by crossed wooden arches. a building date is not fixed; we might therefore regard as such the change from the 14 th to the 15 th centuries. Instead of battlements appear at top slot-shaped windows (indeed later?).

Note 205. Adler. Plates 15, 16.

Just so is lacking the determination of a date for the round tower at the Stern gate at Brandenburg, which we illustrate in Figs. 164 to 168. ²⁰⁶ It is mentioned as existing in the thirties of the 15 th century, and thus may have been erected at the close of the first quarter.

Note 206. From the same. Plate 40 and page 74.

It now has two entrances in the ground story, only one of which is original, but certainly did not lead into the inter-

interior but only to a window balcony, that ascended in the thickness of the wall, so that the men could reach the battlements directly from the street; for one must still gradually descend, but important it must have been for effective defense, that the defenders could also easily ascend and descend. Over the ground story are four low and partially vaulted windows, a defensive structure was built, but the construction a broad passage behind the battlements and a central narrow spire. What gives the tower a special charm is the use of separate glazed bricks, that are laid in regular alternation between the red ones. The architecture, which now appears mostly as a wall, was formerly with battlements. At the bottom of the ditch. Likewise the battlements are characteristic of the tower and the structure of the tower is similar to that with the masonry masonry.

A likewise round tower stands beside the Newmarket gate at Wessermünde, whose plan is represented in Fig. 169, and a plan to recognize how formerly the connection of such towers with the gatehouse was arranged. According to Adler the tower was erected in 1435 - 1440. The tower likewise above the use of glazed bricks; 32 corbels around a gallery, that was covered by a roof and had its openings like windows instead of the battlements. Higher above is placed a row of iron hooks, that can have had no other purpose, that that of raising a second gallery, instead of wood. It is given in Fig. 170 according to Adler's restoration; however we believe that a spire must have been placed on the tower, but will not connect, it cannot protect the tower, such as the tower at Brandenburg still exists. Certainly this line will not flow from the pen of the draftsman.

Note 207. From Adler. Plate 45.

As we can see from the plan, the tower is a round tower and to the round tower M corresponds at the other side a defensive platform of the gatehouse. The city wall is thin, so that latest earth could be built against its base and a wooden defensive gallery gave it breadth and thickness as we have indicated in Fig. 169. The ground story of the tower M is only accessible from the crown of the vault, which is placed at the bottom of the defensive platform of the gate, from which

interior but only to a winding stairway, that ascended in the thickness of the wall, so that the men could reach the battlements directly from the street; for one must still gradually recognize, how important it must have been for effective defense, that the defenders could also easily ascend and descend. Over the ground story are four low and partially vaulted stories, a defensive platform does not exist, but on the contrary a broad passage behind the battlements and a conical masonry spire. What gives the tower a special charm is the use of separate glazed bricks, that are inlaid in regular alternation between the red ones. The substructure, which now appears merely as a base, may formerly have extended deeply to the bottom of the ditch. Likewise the battlements are characterized by colored bricks and the alternation of stuccoed surfaces with the masonry members.

A likewise round tower stands beside the Neustadt gate at Tangermünde, whose plan is represented in Fig. 169,²⁰⁷ and allows us to recognize how formerly the connection of such gate towers with the gatehouse was arranged. According to Adler the tower was erected in 1436 - 1440. The tower likewise shows the use of glazed bricks; 32 corbels support a gallery, that was covered by a roof and had 16 openings like windows instead of the battlements. Higher above is placed a row of iron hooks, that can have had no other purpose, than that of adding a second gallery, indeed of wood. It is given in Fig. 170 according to Adler's restoration; however we believe that a spire must have been placed on the tower, but will not contest, if anyone prefers the form, such as the Stern tower at Brandenburg still exhibits. Certainly this line will not flow from the pen of the draftsman.

Note 207. From Adler. Plate 45.

As may be seen from the plan, the gatehouse K widens inside, and to the round tower M corresponds at the other side a rectangular structure L, that however rises but little above the defensive platform of the gatehouse. The city wall N is thin, so that indeed earth piled against its base and a wooden defensive gallery gave it breadth and thickness as we have indicated in Fig. 169. The ground story of the tower M is only accessible from the crown of the vault, which is placed at the height of the defensive platform of the gate, from which

is the only entrance to the tower. There are above the ground four more stories, corresponding to the external addition. Before the gate a stone bridge now leads over the city ditch. However we do not stand at all, that originally a wooden bridge existed, at about the middle being furnished with a movable portion. To the external outer staircase, before which is to be conceived an enclosure A of palisades, was attached the earth wall D, partly well preserved into the 18th century, surrounding an enclosure outside the ditch. Yet we remark that both the tower building, like the solid building, and the ditch have the same, and instead conceived good formerly, even if they had but a temporary character, I like not such structures.

Completely allied to this design is perhaps 20 years later the 18th date at Wernau. Yet for the protection of the gate only at one side exists the round tower, while the other side of the gate is without special protection; besides the latter, which at the present time of Tugendmunde protects strongly from the face of the wall, so that the exterior of the wall can still be seen, is yet in the face of the wall itself (see the adjacent plan). The ground story of the tower is also here only accessible from above. Yet it contains a wall in its interior, so that the tower is thus placed inaccessible, entirely like a castle tower of the earlier time. The second story is accessible from the city and lies in the thickness of the wall. The tower seems to have had no masonry store, but indeed must have had a wooden roof resting on the battlements, that covered the defensive platform. Such a roof must then also be conceived over the gate H.

in the 18th century gate at Söndel, Nos. 171 to 174, which also perhaps we must regard as the latest of that series; at least the positive architecture indeed allows this conclusion. On a square plan rises the tower structure, whose ground story contains the tower hall, that is covered by a cross vault. Above are yet two square upper stories, bordered at the sides by round turrets rising toward the square mass of the building. This is terminated by a crown like battlements, from whose middle is then developed the round tower. The upper turrets have masonry gables with ornamental

is the only entrance to the tower. This has above the ground four upper stories, corresponding to the external subdivision. Before the gate a stone bridge now leads over the city ditch. However we do not doubt at all, that originally a wooden bridge G existed, at about the middle being furnished with a movable portion H. To the external outer structure B, before which is to be conceived an enclosure A of palisades, was attached the earth wall D, partly well preserved into the 18 th century, surrounding an enclosure outside the ditch. Yet we remark that both the tower building, like the oblong building standing beside it, now have tile roofs, and indeed possessed such formerly, even if they had but a temporary character, like most such structures.

Entirely allied to this design is perhaps 20 years later the Elbe gate at Werben. Yet for the protection of the gate only at one side exists the round tower, while the other side of the gate H is without special protection; besides the latter, which at the Neustadt gate at Tangermünde projects strongly from the face of the wall, so that the exterior of the wall can still be swept, is yet in the face of the wall itself. (See the adjacent Plate). The ground story of the round tower is also here only accessible from above. Yet it contains a well in its interior, so that the tower is thus placed independently, entirely like a castle tower of the earlier time. The ascending stairway is accessible from the city and lies in the thickness of the wall. The tower seems to have had no masonry spire, but indeed must have had a wooden roof resting on the battlements, that covered the defensive platform. Such a roof must then also be conceived over the gate H.

Indeed the best known of this entire series of structures is the Uenglicher gate at Stendal. Figs. 171 to 174,²⁰⁸ which also perhaps we must regard as the latest of that series; at least the sportive architecture indeed allows this conclusion.²⁰⁹ On a square plan rises the tower structure, whose ground story contains the tower hall, that is covered by a cross vault. Above are yet two square upper stories, bordered at the angles by round turrets rising upward from the square mass of the building. This is terminated by a crown like battlements, from whose middle is then developed the round tower. The little angle turrets have masonry pinnacles with ornamental bli-

blind series of battlements. These pinnacles prove, that also the principal tower must have had such a spire, and since nothing thereon indicates that it was of masonry, then we have drawn one of wood, that rests on the row of battlements. If we further conceive a city ditch with this, from whose bottom rise tower and wall, then is the appearance naturally far more effective, than in the existing mutilated form.

Note 208. From Adler. Plate 36.

Note 209. The tower must indeed be placed in the time from 1470 to 1490, which the windows instead of slots indicate. A noteworthy is for this time the form of the shields.

A peculiar treatment is shown by the Ruppin gate at Gnansee (Brandenburg), whose near side toward the city is richly ornamented, and we reproduce it in Fig. 175.²¹⁰ It is imitated from the facade of a house. Above the gate hall are two upper stories, over which is a gable divided in three parts, which corresponds to a gable roof, that is placed above this tower structure, just as on a house.²¹¹

Note 210. From Adler. Plate 77.

Note 211. Similar, ornamentally treated, but still richer in its lower portion and avoiding all reminiscence of military architecture, appears the rather earlier entrance gate to the monastery of Chorin, the "portal house", which we reproduce in Fig. 176 (from Adler, plate 69). Elsewhere and so in Moulbronn, also the Cistercian monastery one surrounded by fortifications and the entrance tower is a fortress tower. But these fortifications of the monastery, just like those of Moulbronn, were yet only sufficient against a sudden surprise by a small body, and it appears that just here men avoided the choice of the forms of military architecture.

Similar in design to the gates of Cologne, but developed in a later and more ornamental architecture, appears the Spahlen gate at Basle (Fig. 177),²¹² a gatehouse treated like a tower, accompanied by two round towers. Before it lies a square court enclosed by a wall, whose crown bears a defensive gallery and whose facade has a great entrance gate, and beside it is a little doorway for persons on foot.

Note 212. From F. Schultz in Mitt. d. K.K. Cent. Comm. etc. 1868. p. 128.

Likewise a square gate tower with small turrets at the ang-

andies, that Verrill's drawings perspective of Wall 212 shows as the Verrill gate, according to water illustration Viollet-le-Duc has attempted to enlarge the entire work, as it is reproduced in Vol. 178. ²¹⁴ Notable there is the outlook before and beyond the ditch, through which the way passes sideways, as at the bridge ends in Ochores. Of the great and small draw-bridge, which Viollet-le-Duc has drawn at the gate tower, we can find no vestige in Verrill's representation, but instead a wall facade, which connects the outer gate with the main gate, and constructs the approach of an entry coming from the right. Note 213. In Topog. Polot. Rient, etc. Description and true representation of the most prominent cities and places in the lower Polotinate on the Rhine and adjacent lands, etc.

Note 214. From Viollet-le-Duc. Vol. 1. p. 486.

entirely developed into a bastion and arranged for defense by artillery are the two round towers of the bastion on the left side at Batten (Vol. 179). ²¹⁵ They bear the date of 1803. In these stories over each other in the round towers are found three windows in each for small guns. The only ditch is almost entirely filled, so that the towers, that formerly extended down to its bottom, now appear rather low. Also the bastion has naturally disappeared. The stories in the bastions of the towers had been floors; they could only receive light guns. By large cannon, that would have been too heavy, also in any case would have been too great snags in the still in the structures. The towers have only small control stone roofs, that are surrounded by high galleries; yet these lack all protection, so that they could nowhere defend any men. Round a gateway towers with control gates of similar form, attached at the base of the towers, lead to the bastion and to the galleries.

Note 215. From Volter, G. Denkmäler der deutschen Baukunst, continued by E. Globisch. Vol. 3. p. 18. plates 49 - 51. Darmstadt, 1882.

angles, that Merian's birdseye perspective of Metz ²¹³ shows as the Morelle gate, according to which illustration Viollet-le-Duc has attempted to enlarge the entire work, as it is reproduced in Fig. 178.²¹⁴ Notable there is the outwork before and beyond the ditch, through which the way passes sidewise, as at the bridge gate at Cahors. Of the great and small drawbridge, which Viollet-le-Duc has drawn at the gate tower, we can find no vestige on Merian's representation, but indeed a wall facade, which connects the outer gate with the main gate, and obstructs the approach of an enemy coming from the side.

Note 213. In Topog. Polot. Rheni, etc. Description and true representation of the most prominent cities and places in the lower Polotinate on the Rhine and adjacent lands. etc.

Note 214. From Viollet-le-Duc. Vol. 1. p. 426.

Entirely developed into a bastion and arranged for defense by artillery are the two round towers of the Jerusalem or lower gate at Bidingen (Fig. 179),²¹⁵ that bear the date of 1503. In three stories over each other in the round towers are found three embrasures in each for small guns. The city ditch is almost entirely filled, so that the towers, that formerly extended down to its bottom, now appear rather low. Also the drawbridge has naturally disappeared. The stories in the interiors of the towers had beam floors; they could only receive light guns. By large cannon, that would have been too heavy, also in any case would have been too great shocks in the still little structures. The towers have only small conical stone roofs, that are surrounded by wide galleries; yet these lack all protection, so that they could nowhere protect any men. Round stairway towers with conical spires of similar form, attached at the rear of the round towers, lead to the different upper stories and to the galleries.

Note 215. From Moller, G. Denkmäler der deutschen Baukunst, continued by E. Glöckner. Vol. 3. p. 13, plates 49 - 51. Darmstadt. 1851.

Chapter 13. Outworks.

158. The Problem.

We have previously stated, that men regarded the gates as formal castles, that could be defended independently of the castle or city wall. We have referred to the great towers, where the gate only consisted of a simple light gatehouse, that was erected for its protection, and like the principal towers of castles had no entrance at all in the ground story. Such defensive towers must now be of still greater effect, if erected outside the gate, so that by them was commanded the land outside, and at the same time access to the gate could be entirely stopped. Independent outworks of this kind already appear to have come into use very early, and men found it imperatively necessary everywhere, that a bridge was thrown across a river, to erect a bridgehead on the opposite side, and where a bridge led over the ditch, to construct at least an enclosure of palisades on the outer side, within which a part of the garrison could stay, and could contest entrance to the bridge with the approaching enemy. Thus were erected more or less extensive works in masonry, when there were men enough to garrison them also, and to defend them energetically.

Wiethase ²¹⁶ believes himself able to assume, that already at the time, when the fortifications of Cologne only consisted of merely earth walls, the gates not merely formed strong castles in the line of the wall, but were also furnished with enclosing outworks, that as he represented them on the title plate, were rather castles, or more formal fortified camps. Where all positive starting points are lacking, without the easily sketched imaginations, that he has not adopted at all in the work itself, but has rejected it there, and has banished it to the allegorical composition of the title plate, to examine it in detail, we must still admit, that the ground idea of his composition appears so correct, that we cannot oppose it. certainly so far as such works are preserved elsewhere, they do not have that extent.

Note 216. See Wiethase.

159. Outwork of the Castle at Carcassonne.

Thus at Carcassonne (Fig. 1, p. 23) on the western side of the castle next the river Aude is found a circular work, surrounded by a ditch, but which again had its outwork enclosed

by galleries, and projected the entrance to the castle at the foot of the rock, from which it rose. The work may have originated in the second half of the 13th century, but still not almost entirely disappeared, when Viollet-le-Duc made his drawings. These only his details for the restoration is represented by fig. 150; and we have omitted the greater part of the stone in the circular wall intended for crossbow men, since nowhere do the buildings of the 13th century, not even those of the 15th, show such abundance of slots as is given here, besides the wooden defensive gallery could receive another man to best arrows on all sides.

These independent structures is connected with the gate of the castle by a narrow passage, that ascends the rock. In the view it is used appears as if Viollet-le-Duc wished to represent the entrance as it is led into the circular work. Yet from its plan it is to be seen, that being in the bridge towers and the gate first in the passage, so that the rear part of the entrance is swept by shots from the outwork, that is entirely unaccounted, the way now leading through it. The passage is a narrow high wall, whose crown is stepped, and is divided into three portions by cross walls, so that each of these must be separately taken. The upper portion extends upwards to the top of the upper castle wall, where it turns and leads into the interior battlements of the tower G, from which a flight of steps, which is easily defended, and over which one must ascend to the interior of the court.

Note 217. From the same. Vol. I. p. 359.

150. Bastille de Paris.

Whatever most of such outworks have been the purpose for the entrance of the city to lead thence, in order not to be taken by surprise, the line of defense. Such long as possible within reach of the line of defense. Such a structure was originally intended for the purpose was the Bastille de Paris, which was built in the 14th century, and whose destruction is counted among the heroic deeds of the French revolution, whose centennial celebration by the French occurred not long since. Unfortunately representations exist and are still in circulation, so that we can reproduce from Viollet-le-Duc 217 in the 191 a picture consecutive.

by palisades, and protected the entrance to the castle at the foot of the rock, from which it rose. The work may have originated in the second half of the 13 th century, but still had almost entirely disappeared, when Viollet-le-Duc made his drawings. Thus only his design for the restoration is represented by Fig. 180; but we have omitted the greater part of the slots in the circular wall intended for crossbow men, since nowhere do the buildings of the 13 th century, not even those of the 15 th, show such abundance of slots as he gives here, besides the wooden defensive gallery could receive enough men to send arrows on all sides.

This independent structure is connected with the gate of the castle by a narrow passage, that ascends the rock. In the view it indeed appears as if Viollet-le-Duc wished to represent the entrance as if it led into the circular work. Yet from its plan it is to be seen, that behind it the bridge towers and the gate lies in the passage, so that the rear part of the bridge is swept by shots from the outwork, that is entirely separated, the way not leading through it. The passage lies between high walls, whose crown is stepped, and is divided into different portions by cross walls, so that each of these must be separately taken. The upper portion extends directly to F at the foot of the upper castle wall, where it turns and leads into the interior beside the tower G, first again to a flight of steps, which is easily defended, and over which one first ascends to the platform of the court.

Note 217. From the same. Vol. 1. p. 359.

160. Bastile at Paris.

Meantime most of such outworks have just the purpose for the entrance of the city to lead through them, in order not merely to interrupt it more easily, but also to hold it as long as possible within reach of the lines of defense. Such a structure particularly adapted for this purpose was the Bastile at Paris, that was built in the 14 th century, and whose destruction is counted among the heroic deeds of the French revolution, whose centennial celebration by the French occurred not long since. Fortunately representations exist and are sufficiently intelligible, so that we can reproduce from Viollet-le-Duc ²¹⁸ in Fig. 181 a birdseye perspective.

Note 218. From the same. Vol. 2. p. 173.

at a good old restoration tower of St. Andrew's date, to
which had a bridge over the city ditch, but which did not now
have great strength, but for from it already being a new date
with two round towers, so that about 1869 Charles V appended
the addition of a work with six other towers to these two
old date towers, that were surrounded by a ditch and had
as on four sides, through which the way passed, interrupted
by bridges and drawbridges, and beyond led through overworks,
so that this little castle looked inside the city wall could
not be taken without the help of the city wall and the
any external enemy.

161. Outwork of the Water Gate at Cologne.

Of the outwork, which in the course of the middle ages the
now destroyed gates of Cologne received, indeed the most ext-
ensive and most important was that, which stood before the
Water Gate, and of which at least the plan has been preserved,
which was measured in 182. 219 (At a scale of 1 : 500).
The restoration date structure was accompanied by two round
towers, at both sides attached by the city wall; in the case
rior of the city lay a court at each side. The tower city 219
top had a very considerable extension, at the centre of which
lay a small irregular polygonal work, that is described as
the "enclosure", and was connected with the gatehouse by a
wide passage.

162. The Water Gate at Cologne.

The walls surrounding the "enclosure", like the city walls
had strengthening doors and arches with a slot in each arch
niche. On two sides round the polygonal outwork led to the
outer ditch. Between the ends of the latter outwork passed
the bottom of the city ditch, and there also ended the bottom
of the second outer ditch enclosed the city wall. At one side
the road led toward the tower; at the other side before the
gate lay the old Roman road to Elfton. But both roads lay
under the reach of arches from the enclosure, the angle towers
and outworks. If one came from outside, and reached the first
gate and entered into the outer court of access, he found him-
self directly opposite a slot for shooting, as well as the
entire front of the enclosure. After entering the enclosure,
since the walls were lower than the main city wall and under
shows from the latter, as well as from down round towers of

At A stood the old rectangular tower of St. Anton's gate, to which led a bridge over the city ditch, but which did not possess great strength, not far from it already being a new gate with two round towers, so that about 1369 Charles V arranged the addition of a work with six other towers to these two latter gate towers, that were surrounded by a ditch and had gates on four sides, through which the way passed, interrupted by bridges and drawbridges, and beyond led through outworks, so that this little castle located inside the city wall could even be defended against the city of Paris, as well as against any external enemy.

161. Outwork of the Weyer Gate at Cologne.

Of the outworks, which in the course of the middle ages the now destroyed gates of Cologne received, indeed the most extensive and most important was that, which stood before the Weyer gate, and of which at least the plan has been preserved, which we represent in Fig. 182. ²¹⁹ (At a scale of 1 : 500). The rectangular gate structure was accompanied by two round towers, at both sides adjoined by the city wall; in the interior of the city lay a court at each side. The inner city ditch had a very considerable extension, at the centre of which lay a great irregular polygonal work, that is designated as the "enclosure", and was connected with the gatehouse by a wide passage.

Note 219. From Niehoff. Plote 24.

The walls surrounding the "enclosure", like the city walls had strengthening piers and arches with a slot in each arched niche. On two sides repeated trapezoidal outworks led to the outer gates. Beneath the ends of the latter outworks passed the bottom of the city ditch, and there also ended the bottom of the second outer ditch enclosing the city wall. At one side the road led toward Frechen; at the other side before the gate lay the old Roman road to Zulpich. But both roads lay under the reach of shots from the enclosure, its angle towers and outworks. If one came from outside, had reached the first gate and entered into the outer court of access, he found himself directly opposite a slot for shooting, as well as the entire front of the enclosure. After entering the enclosure, since its walls were lower than the main city wall and under shots from the latter, as well as from both round towers of

the gate, and finally from the gate as he approached it, and he could only then make the attempt to assault the gate..

A glance at the directions of the slots for shooting, both in the "enclosure" itself, as well as in its two entrance courts and the connection with the gate shows, what great pains men took to meet the enemy everywhere, where he might stand, and particularly at such points he wished to storm, not merely to pelt him from the front, but also from the side and rear. If we conceive this entire enclosure further equipped with projecting defensive galleries on the crown of the wall, then results a work of quite extraordinary strength, but which also required a considerable garrison. But we also see particularly, that this garrison had easy exit and entrance into the city through the great wide gate, that accordingly it could fight in the open field or withdraw behind the walls. It was especially necessary for this, that two entrances led from outside into the enclosure.

If we conceive a similar outer castle before each gate of the city, which was correspondingly defended by casting machines, there remained to the enemy, if he did not wish to attack these mighty works, only a short space left behind two towers indeed, mostly none at all, at which an attack on the city wall could be undertaken, without being more endangered on both sides by missiles from these outer castles, than by the directly attacked defenders of the city walls. We must indeed refer this enclosure at the Weyer gate even to the middle of the 15 th century, the time before artillery predominated in attack and defense, to which indeed many details of later transformations are to be attributed.

162. Outwork of the Floriani Gate at Cracow.

Already arranged for firearms, even if at first only little guns and muskets, is the work before the Floriani gate in Cracow, still well preserved in all essential parts (Fig. 183),²²⁰ of which the ditch is filled, and thus the lower portion is concealed in the earth. We know that this work belongs to the close of the 15 th century.

Note 220. See Essenwein, A. Die mittelalterliche Kunstdenkmale der Stadt Krakau. Pl. 12. Leipzig. 1886.

It is planned in the form of two-thirds of a circle, whose other third is formed by two sides of a hexagon, from whose

While the way leads to the main gate. The entrance to the out-
work does not lie on its axis, but elsewhere, so that the way
over the bridge to the gate must be taken at an angle from the
main and enclosure walls. This fact alone with its implication
must belong to a late restoration, and originally an outwork
existed extending farther. The existing series of enclosures
in the substratum only served for screening the ditch; the
two higher rows connected the ground outside the city, that
here was certainly not wide, since the outer city was built
quite close to the city itself. The projecting upper defense-
ive gallery was intended for a great number of marksmen, that
were easily in position to reach a direct shot on the work.

For upper defensive battery purposes, on the contrary, and we can
assume, that between the corbels here originally were found
also casting poles; over the entrance gate such still exist.
It is possible, that both the defensive battery is open on the
interior, as well as both series of holes for small arms, the
upper one being served from an open balcony. But the two up-
right rear ends of the outwork turn their fronts toward the
round court, so that the enemy, if he had penetrated there,
still always saw a defensive front across the gate.
168. Outwork of the Pontifical Palace at Rome.

In the middle of the outwork directly across the gates and the
city wall, and they connect the latter by the wall of the
enclosure into the ditch. We have in Art. 150 (p. 208) descri-
bed the system of the wall of the outwork at the latter gate,
torn down a few years since, and we add its plan in Fig.
169. The enclosure at the junction on the north side was ind-
eed very narrow for a short distance, yet only so made it pos-
sible there to arrange a ramp behind the angle tower, on which
one could descend into the city ditch.

169. Here this is called the place of arms. How old is
this appellation, we are not in condition to prove, yet doubt
that it is very old.

One date itself at A has a castellated tower beside it, in-
stead of which about the middle of the 16th century appeared
one of the four famous round towers, that are erroneously at-
tributed to Albert Dürer. We assume, that then before the in-
ter city wall and the gate was still found a small ditch, so
that the gate still retained a bastion. The position of a

angle the way leads to the main gate. The entrance to the outwork does not lie on its axis, but sidewise, so that the way over the bridge to the gate must be taken under fire from the main and enclosure walls. Yet this gate with its drawbridge must belong to a late restoration, and originally an outwork existed extending further. The existing series of enclosures in the substructure only served for sweeping the ditch; the two higher rows commanded the ground outside the city, that here was certainly not wide, since the outer city was built quite close to the city itself. The projecting upper defensive gallery was intended for a great number of muskets, that were easily in condition to repel a direct storm on the work. This upper defensive gallery projected on corbels, and we can assume, that between the corbels here originally were found also casting holes; over the entrance gate such still exist. It is notable, that both the defensive gallery is open on the interior, as well as both series of holes for small guns, the upper one being served from an open balcony. But the two straight rear sides of the outwork turn their fronts toward the round court, so that the enemy, if he had penetrated there, still always saw a defensive front before the gate.

163. Outwork of the Laufer Gate at Nuremberg.

In Nuremberg the outworks directly adjoin the gates and the city wall, and they project but little beyond the wall of the enclosure into the ditch. We have in Art. 150 (p. 203) described the system of the wall of the outwork at the Laufer gate, ²²¹ torn down a few years since, and we add its plan in Fig. 184. The enclosure at the junction on the north side was indeed very narrow for a short distance, yet only to make it possible there to arrange a ramp behind the angle tower, on which one could descend into the city ditch.

Note 221. Here this is called the place of arms. How old is this appellation, we are not in condition to prove, yet doubt that it is very old.

The gate itself at A has a rectangular tower beside it, instead of which about the middle of the 16th century appeared one of the four famous round towers, that are erroneously attributed to Albert Durer. We assume, that then before the inner city wall and the gate was still found a small ditch, so that the gate still required a drawbridge. The position of t

the rectangular tower was excellent for commanding the exterior front of the wall and the gate itself, as well as the way from the outer gate to the inner one. The outer gate did not lie opposite the inner gate; it was nearly at the opposite end of the outer wall. A wooden bridge over the city ditch led to it; a drawbridge formed the end. Yet illustrations from the last century recognize, that also the middle of the bridge could be opened. The short front of the wall contained the gate, which was in the middle of the wall. It was entirely covered the end of the bridge, and particularly the drawbridge. From the city wall, that bested the entrance doorway had two passages for guns. One was directed directly toward the entrance, to reach every one that attacked it, the other pointed toward the rectangular gate tower above the entrance to the ramp leading to the city ditch, so that if there was an enemy, who had reached the city ditch, desired to enter, he could be received not only from the gate tower of the projection building, from the rectangular gate tower, and the inner front of the enclosure wall terminating the enclosure, but also could be greeted by a small gun from this round tower.

144. Round Tower.

That such an outlook as that of the Round Tower place of arms was itself of great importance for the defense of the city is clear. But to command the ground before the city further, such works were insufficient; there even followed in the middle of the 14th century the rebuilding of the tower A, in order to erect on its platform a battery of large cannon, that should command the country afar. We have already seen in Art. 143 (p. 202), that such batteries worked with more safety at a lower position; and have also mentioned that such a one was also erected about the close of the 15th century beside the forecast of the Gothic gate, at the now so-called Koenigs-

However if such works fulfill their purpose and are to dominate the vicinity, they must lie farther outside. The date of their (p. 179) therefore shows as the battery removed from the center; yet more distant are they shown by other cities, that we find in Berlin. The outlook of Oranienburg shows the same

the rectangular tower was excellent for commanding the external front of the wall and the gate itself, as well as the way from the outer gate to the inner one. The outer gate did not lie opposite the internal gate; it was nearly at the opposite end of the outer wall. A wooden bridge over the city ditch led to it; a drawbridge formed the end. Yet illustrations from the last century recognize, that also the middle of the bridge could be opened. The short front of the wall containing the outer gate is likewise flanked by two well located towers, that not only sweep the front of the wall, but also entirely covered the end of the bridge, and particularly the drawbridge. Opposite the gate also a small semicircular tower projected from the city wall, that besides the entrance doorway had two embrasures for guns. One was directed directly toward the entrance gate, to reach every one that attacked it, the other pointed toward the rectangular gate tower above the entrance to the ramp leading to the city ditch, so that if there an enemy, who had reached the city ditch, desired to enter, he could be received not only from the angle tower of the projecting building, from the rectangular gate tower, and the inner front of the opposite wall terminating the enclosure, but also could be greeted by a small gun from this round tower.

164. Detached Outworks.

That such an outwork as that of the Nuremberg place of arms was itself of great importance for the defense of the city is clear. But to command the ground before the city further, such works were insufficient; there even followed in the middle of the 14 th century the rebuilding of the tower A, in order to erect on its platform a battery of large cannon, that should command the country afar. We have already stated in Art. 149 Sp. 202), that such batteries worked with more safety at a lower location; and have also mentioned that such a one was also erected about the close of the 15 th century beside the forecourt of the Spittler gate, at the now so-called Kochert's enclosure.

However if such works fulfil there purpose and are to dominate the vicinity, they must lie farther outside. The gate of Metz (Fig. 178) therefore shows us its battery removed from the outside; yet more distant are they shown by other cities, that we find in Merian. The outlook of Cracow forms the tran-

transition to this. Instead of the masonry structure rising in several stories was required only a low building with great embrasures, that similarly stood before the gates. Thus Viollet-le-Duc shows us ²²² from Merian round bastions with cannon as for distant outworks of Lubeck. Such isolated outworks then led to the method of fortification of the later time.

Note 222. Viollet-le-Duc. Vol. 1. p. 429.

and style.

(The English)

The English language, which is the subject of this book, is the

will indeed have been, that we have not attempted to establish first the rules of the military architecture of the middle ages, and to prove even by certain examples, but that in each of our chapters we have presented one example after another approximately in chronological sequence, attaching remarks to each to show how the rules result from these examples themselves, but the chief rules were; especially to study the special problem solved by each separate structure, to show how the rules are every advantage, to make us for every disadvantage so far as the means of the artist concerned -- leading to so many a separate consideration, and the rules deduced from the analysis of buildings have been quite limited in value, since almost nowhere could they be directly applied, and because everywhere the special cases required exceptions. Especially since the use of each separate motive can be limited to definite times.

But the attentive reader will also have noted, that since now our work is intended for the circle of architects, and in fact especially for the younger among them, we have emphasized merely what for the architect is in recognition and explanation the meaning of the form, and to not especially the knowledge of those that history, but why military architecture had developed the two series of forms, which is so entirely independent from that developed in civil architecture, and even from that representative in some architectural. Since we write for architects, we believe that we should also make our entire mode of illustration, even as is easily intelligible to architects. Therefore we have sought to make as possible to change the technical military expressions of the earlier and later times, since the architect otherwise has to make his own sufficient architectural expressions, that have come down from old times, as well as have originated in later times. Likewise these technical expressions will rather, like technical words in architecture, partly in that they do not have the same signification at all places and times, so that

Chapter 14. Battlements, Defensive Galleries, Bays and Slots.

165. Review.

The honored reader, that has attentively followed us so far, will indeed have noted, that we have not attempted to establish first the rules of the military architecture of the middle ages, and to prove each by certain examples, but that in each of our Chapters we have arranged one example after another approximately in chronological sequence, attaching remarks to each to show how the rules result from these examples themselves, but the chief rules were; carefully to study the special problem served by each separate structure, to thoroughly utilize every advantage, to make up for every disadvantage so far as the means of the master permitted -- leading to so many separate considerations, that the rules deduced from the series of buildings have been quite limited in value, since almost nowhere could they be directly applied, and because everywhere the special case required exceptions. Particularly also the reader must have seen, that only with the greatest care the use of each separate motive can be limited to definite times.

But the attentive reader will also have noted, that since now our work is intended for the circle of architects, and indeed preferably for the younger among them, we have emphasized merely what for the architect aids in recognizing and explaining the meaning of the forms, what for him especially the knowledge of these must disclose, that why military architecture had developed its own series of forms, which is so entirely independent from that developed in church architecture, and even from that determinative in house architecture. Since we write for architects, we believed that we should also so make our entire mode of illustration, that it is easily intelligible to architects. Therefore we have sought as much as possible to change the technical military expressions of the earlier and later times, since the architect otherwise has to make his own sufficient architectural expressions, that have both come down from old times, as well as have originated in later times. Likewise these technical expressions still suffer, like technical words in architecture, partly in that they do not have the same signification at all places and times, so that

For every object a series of different expressions occur. These expressions are not all used at the same time, but each one has its own special use. Therefore it is not correct to say that one expression is better than another. We must avoid technical terms and use a little in this direction, while we avoid technical terms. This is not understood otherwise.

For this book of the last defensive work, if we have now a book of the last offensive work, this did not occur in order to translate it from French to German, but only to avoid a technical term which was too common. In any case this cannot be entirely correct; still we cannot get away from "Zwischen" (intermediate), "Anfang" (beginning), and others, and since it is then necessary in our final chapter to return yet to some things in connection, that we have not partly stated incidentally and partly passed over. But also we have not everywhere been able to perfectly complete the description and illustration of all details without breaking the connection, so that it is necessary to enter yet further into a number of small details, so which therefore this final Chapter of correction.

106. Palisades.

When already before the time that we have to treat, on the other hand, the question of the palisades, we must first of all know that these first had the purpose of opposing by another hand the otherwise difficult ascent of the enemy wall by the enemy. But they must not be so arranged, that the enemy could easily pass them out, nor prevent the defenders from ascending the enemy during his ascent to the crown of the wall. Nor that he could cover himself by them; just as little must they hinder, if the defenders would receive the shooting enemy with stones or arrows. Then we must not think, that the palisades on the ridge wall of our German ancestors had a considerable height. Standing firmly and deeply in the ground, sloping somewhat toward the outside and pointed at the top, they must have projected about 3 ft. or at most 4 ft. from the earth, and about 1 to 1.5 ft. below the point were so firmly connected together by interwoven willow rods, that it was hard to break them as a single one. But in this way they could be seriously

for many objects a series of different expressions occur beside each other and follow in time, so that it is then necessary first to find one's self correct in the domain of technical expression. Therefore if we believed we could enlighten our reader a little in this direction, while we avoid technical military expressions as far as possible, then we ask that this be not understood otherwise.

For example, if we avoid the term "reduit" (retreat) and for this speak of the last defensive work, if we have nowhere said "curtain" but simply wall, this did not occur in order to translate it from French to German, but only to avoid a technical term superfluous to our public. In any case this cannot be entirely carried out; still we cannot get away from "zwinger" (enclosure), "bastion" and others, and since it is then necessary in our final chapter to return yet to some things in connection, that we have but partly stated incidentally and partly passed over. But also we have not everywhere been able to perfectly complete the description and illustration of all details without breaking the connection, so that it is necessary to enter yet farther into a number of small details, to which therefore this final Chapter of mediaeval "military architecture" will be devoted.

166. Palisades.

When already before the time that we have to treat, on the crown of the earth wall was placed a row of pointed palisades, then these first had the purpose of opposing by another hindrance the otherwise difficult ascent of the earth wall by the enemy. But they must neither be so arranged, that the enemy could easily pull them out, nor prevent the defenders from seeing the enemy during his ascent to the crown of the wall, nor that he could cover himself by them; just as little must they hinder, if the defenders would receive the storming enemy with spear or sword. Then we must not think, that the palisades on the ring wall of our German ancestors had a considerable height. Standing firmly and deeply in the ground, sloping somewhat toward the outside and pointed at top, they must have projected about 3.3 ft. or at most 4.3 ft. from the earth, and indeed some 1 to 1.3 ft. below the point were so firmly connected together by interwoven willow rods, that it was hard to draw up a single pile. But in this way they could be seriously

effective for the defense, was scarcely worried of a prospect
non during the conflict itself; for such at least would have
mingered as much as it regarded. But to the light of our studies
man it could only come at last, and for this one has the sub-
eld in the left hand to protect himself by it so far as neces-
sary; a brave man sought no further shelter. It was otherwise
before the attack commenced, so long as persons one was find-
tent of the approach of the enemy, and the soldiers observing
the vicinity stood quietly on the wall; they received a shell-
ter, so that one could not be struck down by an arrow shot
from ambush, before he could know whether a friend or enemy
approached. To provide such protection, at certain places tal-
low girders were driven for a short distance.

Just similarly may the earliest masonry walls have received
on their crowns, on which the defensive light must occur, es-
sely breastworks, that as the name implies only extended to
the breast of a man, so that he could fight from there with a
spear and sword without hindrance. But at certain places the
protecting wall must have been higher, in order to cover the
sentinels on the wall before the combat began. How far such
such stood regularly, and if farther they also necessarily also
distinct slots and verticals, is unknown to us.

There are relatively few old battlefields remaining to us,
so that it is hard to determine the dimensions even for a cer-
tain later time. We must indeed assume in general, that the
where the slots and verticals, the other are the battlements.
it is believed that a portion of the battlements of the West-

century. There the slots and verticals have equal widths of
something over 3.8 ft.; just as much as the breastwork in the
slot, and about as much more the verticals rise above the pa-
raset. Paraset and verticals are not noticed at all, but hor-
izontal; the thickness amounts to between 1.6 and 2.0 ft. 21-
their proportions also have the battlements of the 14th century,
that may well go back to the 11th century, even if the top
of the verticals are also later and belong to the 14th cen-
tury. The horizontal tops of the verticals make it easily pos-
sible to construct a protecting roof of that and on wooden
posts set firm in the inner face on the crown of the wall.

effective for the defense. Men scarcely thought of a protection during the conflict itself; for such at least would have hindered as much as it helped. But to the fight of man against man it could only come at last, and for this one had the shield in the left hand to protect himself by it so far as necessary; a brave man sought no further shelter. It was otherwise before the attack commenced, so long as perhaps one was ignorant of the approach of the enemy, and the sentinels observing the vicinity stood quietly on the wall; they required a shelter, so that one could not be struck down by an arrow shot from ambush, before he could know whether a friend or enemy approached. To provide such protection, at certain places taller piles may have been driven for a short distance.

167. Earliest Walls with Battlements.

Just similarly may the earliest masonry walls have received on their crowns, on which the defensive fight must occur, merely breastworks, that as the name implies only extended to the breast of a man, so that he could fight from them with a spear and sword without hindrance. But at certain places the protecting wall must have been higher, in order to cover the sentinels on the wall before the combat began. How far such walls stood regularly, and if larger they also represented also distinct slots and verticals, is unknown to us.

There are relatively few old battlements remaining to us, so that it is hard to determine the dimensions even for a somewhat later time. We must indeed assume in general, that the wider the slots and verticals, the older are the battlements. It is believed that a portion of the battlements of the Wartburg still go back to the 11th, and at latest to the 12th century. There the slots and verticals have equal widths of something over 3.3 ft.; just as high is the breastwork at the slot, and about as much more the verticals rise above the parapet. Parapet and verticals are not oblique at top, but horizontal; the thickness amounts to between 1.6 and 2.0 ft. Similar proportions also have the battlements of the Salzburg, that may well go back to the 11th century, even if the tops of the verticals are also later and belong to the 14th century. The horizontal tops of the verticals make it easily possible to construct a protecting roof on them and on wooden posts set flush in the inner face on the crown of the wall.

to look as the art of attack at ascending the walls and there overpowered the defenders, the shots could not be wide enough, for one defender, or even two, could receive the assault at one of these, and must be able to move freely with spear and sword, so that the width must not be less than 2.5 ft. Archers or spearmen concealed themselves behind the verticals, and only stepped so much as to beyond them, that they could send their shots to a distance, then to quickly conceal themselves again, before the hostile archers could hit them. But then these verticals were also sufficient with width of 2.5 ft.

But both sides as well as cast stones could only strike at some distance; when the enemy had reached the immediate vicinity, they could no longer harm him. Therefore were arranged towers in the walls, that projected beyond them, so that from the ridges of the towers the enemy could be shot and struck, who found himself at the foot of the wall. The attack against walls and towers occurred not merely on strong ladders, but were raised upon the walls, but also by means of towers rolling on wheels, that if possible were higher than the towers of the fortress, were moved against them, then a part of the front wall was lowered on the wall like a drawbridge, over which the assailants in overpowering numbers rushed down on the crown of the wall or the defensive platform of the tower. These wooden towers were named "conterers." (Shill-peace). In reports that when stone towers did not exist, similar wooden structures were built on the walls, which then bore the same name; for our writers tell us of imaginary castles, that were richly equipped with wooden towers. But that the principal work of the castle, the massive main tower, was so called even in older times, there fails every searching point, as Kähler has shown. It is an entirely different matter, when we find the word "conterer" in the technical expressions.

188. Bays and Defensive Galleries.

From them, the most certain effect must be produced on the enemy standing at the foot, if he could be attacked effectively from above. This presented its difficulties, if great stones were first to be raised to the height of the parapet of the

So long as the art of siege aimed at ascending the walls and there overpowering the defenders, the slots could not be wide enough, for one defender, or even two, must receive the assailant at one of these, and must be able to move freely with spear and sword, so that the width must not be less than 3.3 ft. Archers or spearmen concealed themselves behind the verticals, and only stepped so much aside beyond them, that they could send their shots to a distance, then to quickly conceal themselves again, before the hostile archers could hit them. But then these verticals were also sufficient with width of 3.3 ft.

But both shots as well as cast stones could only strike at some distance; when the enemy had reached the immediate vicinity, they could no longer harm him. Therefore were arranged towers in the walls, that projected beyond them, so that from the sides of the towers the enemy could be shot and struck, who found himself at the foot of the wall. The attack against walls and towers occurred not merely on strong ladders, that were raised upon the walls, but also by means of towers rolling on wheels, that if possible were higher than the towers of the fortress, were moved against them, then a part of their front wall was lowered on the wall like a drawbridge, over which the assailants in overpowering numbers rushed down on the crown of the wall or the defensive platform of the tower. These wooden towers were named "bergfried." (Hill-peace). It appears that where stone towers did not exist, similar wooden structures were built on the walls, which then bore the same name; for our writers tell us of imaginary castles, that were richly equipped with wooden towers. But that the principal work of the castle, the massive main tower, was so called even in olden times, there fails every starting point, as Köhler and Schultz have proved. It is an entirely modern and capricious use of the expression, and in it is a proof, how careful one must be in the belief in technical expressions.

168. Bays and Defensive Galleries.

If the long wall between two towers could also be swept from them, the most certain effect must be produced on the enemy standing at the foot, if he could be struck directly from above. This presented its difficulties, if great stones were first to be raised to the height of the parapet of the

battlements, and then must be thrown over with the stones, when
 the towers and the bend over the solid parapet. Such a case
 could only be made with safety, if a structure projecting be-
 yond the face of the wall existed, that had openings in the
 floor, through which heavy stones could be passed with the
 feet. Such projections in fact could be arranged at certain
 places -- 7 bays, or they could be constructed as defensive bul-
 laries enlarged externally for the entire length of the wall.
 With the great importance that they had, we must assume, then,
 their use goes back into a relatively early time; but all posi-
 tive evidence for this assumption is wanting. Unless for some
 certain recognition, that fragments were attached to the upper
 part of the wall, are scarcely found on the earlier buildings,
 and we must therefore either assume, that still these projec-
 tions defensive bulwarks first occurred pretty late, or we
 believe this should be anticipated, that they had a continu-
 ous jagged recurring no doubt in the masonry, which was eas-
 ily placed, not on the battlements themselves, but instead with
 the projecting part on them.

It is desired these defensive bulwarks to be placed on the
 battlements as given by Viollet-le-Duc,²²³ then the latter a
 and particularly the passage are positively useless for the de-
 fence, but the passage of the defenders is very dangerous
 in the middle of the wooden structure. The passage must be
 placed at least at the height of the parapet.²²⁴ But if this
 were built above the battlements as a projecting roof, then
 could they have their effect, without the battlements having
 lost their purpose, in which case one would rather have en-
 tirely omitted them,²²⁵ that in any case would be better than
 if they were disturbed by stones in the defensive bulwark.
 was especially on towers, where no sweeping of the front from
 the sides was possible, we believe that they were erected, a
 even perhaps if the long wall also remained without such defence.

Note 223. Viollet-le-Duc. Vol. 6, p. 129, 131.

Note 224. The same. p. 129.

Note 225. The same. Vol. 2, p. 240.

Note 226. The same. Vol. 6, p. 127.

it is not entirely excluded, that already before were found
 in fact to us, that certainly belong to a later time, but

battlements, and then must be thrown over with the hands, when the throwers had to bend over the solid parapet. Such a cast could only be made with safety, if a structure projecting beyond the face of the wall existed, that had openings in the floor, through which great stones could be pushed with the feet. Such projections in part could be arranged at certain places -- bays, or they could be constructed as defensive galleries enlarged externally for the entire length of the wall. With the great importance that they had, we must assume, that their use goes back into a tolerably early time; but all positive evidence for this assumption is wanting. Holes for beams permit recognition, that frameworks were attached to the upper part of the wall, are scarcely found on the earlier buildings, and we must therefore either assume, that still these projecting defensive galleries first occurred pretty late, or and we believe this should be substituted, that they had a construction indeed requiring no holes in the masonry, which was easily placed, not on the battlements themselves, but indeed with the projecting laid on them.

If one desired these defensive galleries to be placed on the battlements as given by Viollet-le-Duc,²²³ then the latter and particularly the parapet are perfectly useless for the defense, but the passage of the defenders is very disturbing in the middle of the wooden structure. The passage must be placed at least at the height of the parapet.²²⁴ But if this were built above the battlements as a protecting roof, then could they have their effect, without the battlements having lost their purpose, in which case one would rather have entirely omitted them,²²⁶ that in any case would be better than if they were disturbing by standing in the defensive gallery. Thus especially on towers, where no sweeping of the front from the sides was possible, we believe that they were erected, even perhaps if the long wall also remained without such defense.

Note 223. Viollet-le-Duc. Vol. 6, p. 129, 131.

Note 224. The same. p. 124.

Note 225. The same. Vol. 2. p. 246.

Note 226. The same. Vol. 6, p. 127.

Just such arrangements of wooden defensive galleries frequently remain to us, that certainly belong to a later time, but it is not entirely excluded, that already before were found

similar arrangements on the same or other buildings. No one
give here as examples the tower in Strasbourg (fig. 125) or
the market house at Constance (fig. 126), but above
these projecting wooden structures it is found, that above
the battlements in connection with the framework of the roof.
It is certainly striking, that none of the buildings has bat-
tlements, but show such arrangements on the roof. Viollet-le-
duc, for example gives the tower of the castle of Laval belong-
ing to the 12th century, ²²⁸ that has a projecting defensive
gallery at the base of the roof but no battlements, although
he attributes the defensive gallery to the 15th century. How
and what work took place? Did it also have battlements,
that were removed, when in the 15th century the defensive
gallery was added? Or was such gallery in place in the 12th?
Open questions like so many others. The tower at Durny near
Verdun ²²⁹ with its projecting defensive gallery of the 14th
century is a corner tower of the 12th century transformed
into a fortress. But is a bay like that in fig. 127, or a 10-
sided gallery like the one in fig. 128, which was in
first connection with the roof into the defensive system?
No, then could the roof not be removed and lowered; it
must stand definitely and for itself reduce the use of the
defensive platform above the tower.
Note 228. The tower. Vol. 6. p. 118.
There stone corbels are built in, on which must be constructed
and such wooden external defensive galleries, when it was
necessary for the construction above as an anchor, whether
it was fastened to the wall by beams, that passed through it,
as on the plate next p. 129, or that observation was provided
a connection with the framework behind the wall. Very possible
as is the arrangement on the tower of the castle at Orléans, that
that belonged to the 15th century (fig. 61, p. 116). On that
the battlements are already carried into an enclosing wall
with windows, between which are made slots for shooting. The
corbels to receive the gallery have but little projection, so
that towers must be built having obliquely outward (fig. 127).
But since the slots are too small for use as an archery
gallery, then must be constructed a scaffolding inside an

similar arrangements on the same or other buildings. We can give here as examples the Pfennig tower in Strasburg (Fig. 185)²²⁵ and the market house at Constance (Fig. 186),²²⁷ on whose projecting wooden structures it is found, that above the beams are in combination with the framework of the roof. It is certainly striking, that none of the buildings has battlements, that show such arrangements on the roof. Viollet-le-Duc, for example gives the tower of the castle of Laval belonging to the 12 th century,²²⁸ that has a projecting defensive gallery at the base of the roof but no battlements, although he attributes the defensive gallery to the 13 th century. How did this tower look previously? Did it also have battlements, that were removed, when in the 13 th century the defensive gallery was added? Or was such already in place in the 12 th? Open questions like so many others. The tower at Dugny near Verdun²²⁹ with its projecting defensive gallery of the 14 th century is a church tower of the 12 th century transformed into a fortress. But if a bay like that in Fig. 185, or a defensive gallery like Fig. 186 belonged to it, which was in fixed combination with the roof into the defensive system itself, then could the roof not be removable and temporary; it must stand definitely and for itself refuse the use of the defensive platform above the tower.

Note 227. Viollet-le-Duc. Vol. 2, p. 248. Vol. 6, p. 140.

Note 228. The same. Vol. 6. p. 127.

Note 229. The same. Vol. 6. p. 139.

Where stone corbels are built in, on which must be constructed such wooden external defensive galleries, there it was necessary for the construction above to be anchored, whether it was fastened to the wall by beams, that passed through it, as on the Plate next p. 203, or that otherwise was produced a connection with the framework behind the wall. Very peculiar is the arrangement on the tower of the castle at Coucy, that belonged to the 13 th century (Fig. 61, p. 116). On that the battlements are already changed into an enclosing wall with windows, between which are made slots for shooting. The corbels to receive the gallery have but little projection, so that these must be built sloping obliquely upward (Fig. 187).²³⁰ But since the slots are too high for use from the defensive gallery, then must be constructed a scaffold inside on which

on which the worker could stand. The pool contraction over a distance of 10 feet was indicated by the number of the outer and inner battery representing the time consumed.

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Violent-Deo assures in most of his responses of the
 Galleries, that for each two vertical tubes a central one at
 the top in the external envelope formed the nucleus of it, and

half timber construction, sheathed externally with vertical boards, or it has a covering of shingles as at Leval.

We now have still further to mention the existing fact, that in the presence of old German wine such is found.

Should by day (night) be taken from gross = gross

140. Earliest Bays and Deceptive Galleries.

the a day of even greater protection at each business. In 1977-

on which the archer could stand. The roof construction over the outer and this internal gallery represent the firm connection, that the outward slope of the outer gallery hindered.

Note 230. Viollet-le-Duc. Vol. 6, p. 133.

Viollet-le-Duc assumes in most of his restorations of the galleries, that for each two vertical timbers behind each other in the external enclosure formed the supports of it, and horizontal timbers inserted in the space between them composed the external wall. But in all remaining to us in an ordinary half timber construction, sheath externally with vertical boards, or it has a covering of slates as at Haval.

We now have still further to mention the striking fact, that in the rich treasure of old German words none such is found, that with certainty may denote these projecting wooden defensive galleries, while the French have the word "hourd" for them, that still sounds as it were of German origin, and to which corresponds the mediaeval Latin word "hurtilia". By what other words, that we find in the old literature, were such galleries designated? For most of these it is only difficult to fix the meaning. Should by bay (erker), aerker from from arcus = arched construction) be understood not merely a projection extended a short distance, but also one extending the entire length of a wall?

169. Earliest Bays and Defensive Galleries.

Aside from the Orient, stone bays and defensive galleries must have first appeared in southern France, and have made their way from thence. Viollet-le-Duc gives ²³¹ as the first example of the defensive gallery, which in the 13 th century was built on one of the side buildings of the cathedral at Puy-en-Valay, and widely projecting shows two great casting holes between each two buttresses, to which further corresponds a bay of even greater projection at each buttress. In Germany some structures as Alsatian castles must be the first examples. However it would be hard to find an earlier date. If we have unhesitatingly drawn such at Landsberg (Fig. 70, p. 128), we must then call attention to the fact, that the remains only give certain starting points, and the arrangement first came there indeed in the 14 th or 15 th centuries.

Still another development of the battlement construction do we have to mention. On the tower of the Steinsburg (Fig. 89,

of 1950, the proposed research upon the verticality is substantiated-
ally thinner than those. Kuhn and Huchler have indeed believed
that there must be a certain amount of lateral displacement; but at the
beginning of the research, the verticality was not a problem, since even of-
ficial thin papers between the buildings, since even of-
fer even easier possibilities, even without extensive altera-
tion, even the danger to employ large stones, even hot water
or melted pitch against the enemy at the front of the tower.

It is true that on this point some doubts, but at the same time
the fact that the verticality is not a problem, since even of-
ficial thin papers between the buildings, since even of-
fer even easier possibilities, even without extensive altera-
tion, even the danger to employ large stones, even hot water
or melted pitch against the enemy at the front of the tower.
It is true that on this point some doubts, but at the same time
the fact that the verticality is not a problem, since even of-
ficial thin papers between the buildings, since even of-
fer even easier possibilities, even without extensive altera-
tion, even the danger to employ large stones, even hot water
or melted pitch against the enemy at the front of the tower.

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tion, even the danger to employ large stones, even hot water
or melted pitch against the enemy at the front of the tower.
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ficial thin papers between the buildings, since even of-
fer even easier possibilities, even without extensive altera-
tion, even the danger to employ large stones, even hot water
or melted pitch against the enemy at the front of the tower.

It is true that on this point some doubts, but at the same time
the fact that the verticality is not a problem, since even of-
ficial thin papers between the buildings, since even of-
fer even easier possibilities, even without extensive altera-
tion, even the danger to employ large stones, even hot water
or melted pitch against the enemy at the front of the tower.
It is true that on this point some doubts, but at the same time
the fact that the verticality is not a problem, since even of-
ficial thin papers between the buildings, since even of-
fer even easier possibilities, even without extensive altera-
tion, even the danger to employ large stones, even hot water
or melted pitch against the enemy at the front of the tower.

p. 155), the parapet beneath each ~~two~~ verticals is substantially thinner than those. Krieg von Hochfelden indeed believes that these must be regarded as later restorations; but at the buildings of Carcassonne Viollet-le-Duc draws without scruple similar thin parapets between the battlements, since such offer even easier possibilities, even without defensive galleries, over the parapet to employ large stones, even hot water or melted pitch against the enemy at the foot of the tower. We find just on this tower stone corbels, both at the entrance and also under the battlements, which give evidence that men had the intention from the beginning to build wooden bays there. We also find such corbels on other buildings of the 12 th century, and then under no circumstances can doubt, that such wooden bays with open floors were in use in Germany in the 12 th century. Their employment is established, even if men also will doubt concerning defensive galleries, thus we firmly adhere also to our hypothesis, that they were placed above the battlements. If the galleries stood over the battlements, the form of the latter was naturally just as unimportant, as if a wall beam lay on them, that supported a cornice and roof. The slots became simple windows, before which could be placed wooden shutters, which at least in part protected the archers as well as wooden defensive galleries. We do not doubt for a moment, that such shutters for the slots (between verticals) were everywhere in use in Germany in the 12 th century, where a roof lay on the battlements. The most suitable construction in every case was this, that the shutters had an axis at their tops, which turned in two bearings in the verticals of the battlements, so that the shutters were fixed above and could be opened outward below. Thus we find the battlements equipped also in the tower of Chastel Blanc, that we have to describe in a later Heft (with the chapels).

170. Battlements with Slots for shooting.

The more the idea recurs, that the proper decision lay in repelling a storm from the battlements, the more men counted thereon in fighting the enemy afar and generally in driving off a storm -- and this became the custom in the Orient in the crusades, -- so much the so much less weight men needed to lay on the width of the slots, so much the wider could they make the protecting verticals, and from this development the condi-

condition that the slots received half the width of the verticals, whereby the latter measured 8.8 ft. and the former 2.6 ft. in width. You then found it suitable to add a vertical slot in the verticals, so that the archers could shoot through this slot their arrows from bows and crossbows without leaving the protection. We termed these slots best in contrast to the single spaces "slots for shooting". Yet on the lower of the castle at Gisors the verticals do not have such slots, although they have widths of 6.6 ft. to 8.8 ft. for the spaces. But under each space is formed a slot, and to use it, the defensive platform is not directly surrounded by battlements, but by a thick wall with niches in which the archers could stand at the shooting slots, and shoot down on their own. The defenders of the battlements. (Iris. 97, p. 100).

To Gisors then, of which we have just spoken, we already find a shooting slot arranged under each vertical. Above a broad step the parapet there has a height of about 8.8 ft. the vertical having one of 6.6 ft. The space between the verticals were closed by another. The slot is found directly at the foot of the battlements, so that the archer could aim down without raising his crossbow, and could sit as near as possible to the foot. With opened slits he could shoot through the spaces of the battlements to such a distance as the force of his crossbow covered his arrow. The early living defence the defensive battery and could find long vertical slots in niches, and at the same time niches and shooting slots.

Accordingly the placing of slits between the verticals seems to have been quite general. But men also did not find it always necessary to retain the battlement form. On the walls of York and similarly placed spaces over the spaces (see Plate next page 124); there also below the battlements are a rounded long slots for archers, who could shoot downward from the foot of the inner passage in the wall, where one somewhat levelled downward, so that one could sit as close to the foot of the wall as possible. Similar shooting slots are also arranged in niches at the foot of the wall. We have seen the way in which the English and French were separated from the Continent to Europe.

condition that the slots received half the width of the verticals, whereby the latter averaged 5.2 ft. and the former 2.6 ft. in width. men then found it suitable to add a vertical slot in the verticals, so that the archers could shoot through this slot their arrows from bows and crossbows without leaving the protection. We terme these slots best in contrast to the simple spaces "slots for shooting". Yet on the tower of the castle at Giblet the verticals do not have such slots, although they have widths of 6.6 ft. to 3.3 ft. for the spaces. But under each space is formed a slot, and to use it, the defensive platform is not directly surrounded by battlements, but by a thick wall with niches in which the archers could stand at the shooting slots, and that bore on their crowns the defenders of the battlements. (Fig. 97, p. 160).

In Chastel Blanc, of which we have just spoken, we already find a shooting slot arranged under each vertical. Above a broad step the parapet there has a height of about 3.3 ft., the vertical having one of 6.6 ft. The spaces between the verticals were closed by shutters. The slot is found directly at the foot of the battlements, so that the archer could aim downward without raising his crossbow, and could hit as near as possible to the foot. With opened shutters he could shoot through the spaces of the battlements to such a distance as the force of his crossbow carried his arrow. The story lying between the defensive gallery and chapel had long vertical slots in niches, and at the same time windows and shooting slots, that doubtless like those of the chapel itself were intended for archers. Accordingly the placing of shutters between the verticals appears to have been quite general. But men also did not find it always necessary to retain the battlement form. On the walls of Tortosa men quietly placed stones over the spaces (see Plate next page 194); there also below the battlements are a ranged long slots for archers, who could shoot upward from the foot of the inner passage in the wall, these being somewhat beveled downward, so that one could hit as close to the foot of the wall as possible. Similar shooting slots are also arranged in niches at the foot of the wall. We see in this the most important motive of military architecture transplanted from the Orient to Europe.

In Germany, such shooting slots in the battlements must have

occurred very late, as well as such in the lower part of the wall, since the necessary was mostly lacking for masonry. They are made a bond in the walls of the city of Cologne, but certainly in parts of the wall, that still date from the 12th century, even only as later openings.

In France, Viollet-le-Duc assumes this to be very early; for example, he draws them without hesitation on the buildings of Carcassonne, which he attributes to about the year 1100.

We might even bring to light these slabs, so far as they do not remain, but place enclosing slabs also for France not before the year 1200. They can only have their proper importance where crosses are excavated, and even in great number, and this must have been the case first in Europe at about the end of the 11th century, since such enclosing slabs indeed also in the last buildings of the crosses in the Great East found quite extended employment, as at the Kerk. The earlier military structures of the crosses in contrast to the western masonry show a variety of protection when construction. It could indeed assume, that such also appeared everywhere without leaving a trace, like many in the West. But we do not once find

the same, and the latter is not the same. The same is the case of the east, since on the contrary certain holes over the doorways in the interior also occur greatly commonly, since further the climate made unnecessary any protection of the wall there against the effects of weather, so that we must indeed assume, that men there consistently avoided the same structures of wood. But protecting construction in stone is first found so late, that we must assume, that these constructions of protecting bays and defensive galleries so well established in the East were first found indispensable there in the last period of defense, and were introduced, when men avoided executing them in wood, and also chose stone.

171. Stone Bays.

In the West stone bays may also have occurred at about the same time in military architecture; for we cannot know indeed whether that the earliest examples of such stone construction in the West has remained and even now known. At the moment we know of none to name, and might rather in the construction of the Kerk find the models for different western ones. But 55 to 57 on p. 109, 110 first present recognition, how the eastern

occurred very late, as well as such in the lower parts of the wall, since the necessary men were mostly lacking for using them. They are indeed found in the walls of the city of Cologne, but certainly in parts of the wall, that still date from the 12 th century, even only as later openings.

In France, Viollet-le-Duc assumes this tolerably early; thus for example, he draws them without hesitation on the buildings of Carcassonne, which he attributes to about the year 1100. We might even bring to light these slots, so far as they do not remain, but place shooting slots also for France not before the year 1200. They can only have their proper importance where crossbow men existed, and even in great number, and this must have been the case first in Europe at about the end of the crusades, since such shooting slots indeed also in the latter buildings of the crusaders in the Orient first found quite extended employment, as at the Krak. The earlier military structures of the crusaders in contrast to the western nowhere show a vestige of projecting wooden construction. We could indeed assume, that such also disappeared everywhere without leaving a trace, like many in the West. But we do not once find corbels, that would indicate wooden buildings for protection of the gates, since on the contrary casting holes over the doornways in the interior also occur pretty commonly, since further the climate made unnecessary any protection of the wall there against the effects of weather, so that we must indeed assume, that men there consistently avoided the aiding structures of wood. But projecting construction in stone is first found so late, that we must assume, that these constructions of projecting bays and defensive galleries so well established in the West were first found indispensable there in the last period of defense, and were introduced, when men avoided executing them in wood, and also chose stone.

171. Stone Bays.

In the West stone bays may also have occurred at about the same time in military architecture; for we cannot know indeed, whether just the earliest examples of such stone construction in the West has remained and been made known. At the moment we know of none to name, and might rather in the construction of the Krak find the models for different western ones. Figs. 55 to 57 on p. 109, 110 first permit recognition, how the outer

enclosure of the Krak has not merely a series of battlements, but battlements the spaces also have a series of battlements. But below the crown of the wall, composed by the battlements, is also a passage in the thickness of the wall; in many places are several such passages over each other, that also are equipped with external elope. Yet one of these passages was opened when the stone also an entire row of bays, through whose opening the enemy standing at the foot of the wall could be killed and poured on. However on the southern principal tower and the southern corner of the east side is arranged on projecting corners a complete gallery, that in the floor and openings between the corners, and also seems to show in the outer wall for firing from above the enemy at the foot of the wall.

Although we can give no exact date and this cannot prove, that the battlements on the corner tower of the castle date in 1215 at Vienna must be indicated from those of the Krak, we must still point to the connection; that so we do not for no want, that the row of battlements on the German side as a whole is still to be attributed to the 13th century, like that at the Krak. These battlements have become entirely native in Cologne in the course of the 13th century; at least that there also found such on the other side of the river, and that in the 14th century in a fortunate way in the preservation of the castle at the Rhine, since unfortunately the most recent preservation of the German side has been rejected.

192. Later Battlements and Towers.

The battlements on the great master's residence of Hirsbrunn are richly decorated ornamentally; but they are also of high interest in respect to construction by their connection with the castle tower, as well as by the relatively large openings between the crenellations, through which indeed men could look very conveniently, even if with a restricted line of sight, which was yet entirely concealed. The important part of the defensive battery above the corridor on the north side, as the five angles to be protected, like the crenellations, battlements, as this occurs on the right side of the corner in 1215. In (p. 125), so that the line front of the new castle could be effectively secured thereby.

But with the 14th century in general the battlements only

enclosure of the Krak has not merely a series of battlements, that besides the spaces also have slots under the verticals. But below the crown of the wall protected by the battlements is also a passage in the thickness of the wall; in many places are several such passages over each other, that also are equipped with external slots. Yet one of these passages has between the slots also an entire row of bays, through whose open floors the enemy standing at the foot of the wall could be pelted and poured on. However on the southern principal tower and the two southern towers of the east side is arranged on projecting corbels a complete gallery, that in the floor has openings between the corbels, but also shows no slots in the outer wall for fighting from above the enemy at the foot of the wall.

Although we can give no exact date and this cannot prove, that the galleries on the square tower of the castle begun in 1215 at Vienna must be imitated from those of the Krak, we might still hold to the connection; just so we doubt for no moment, that the row of buildings on the Gereon gate at Cologne is still to be attributed to the 13 th century, like that at the Krak. These buildings have become entirely native in Cologne in the course of the 13 th century; at least Wiet-hase also found such on the other gate structures, and has been able to add them in a fortunate way in the restoration of the castle at the Holmen gate, since unfortunately the permanent preservation of the Gereon gate has been rejected.

172. Later Battlements and Bay Turrets.

The battlements on the grand master's residence of Marienburg are richly treated ornamentally; but they are also of high interest in respect to construction by their connection with the casting holes, as well as by the tolerably large openings behind the casting holes, through which indeed men could shoot very conveniently, even if with a restricted line of fire, but which was yet entirely concealed. The important part of the defensive gallery above the corridor on the north side, we believe should be so restored, like the crusaders' buildings, as this occurs on the right side of the observer in Fig. 128 (p. 185), so that the long front of the new castle could be effectively swept thereby.

But with the 14 th century in general the battlements only

has the appearance of a terrace. The wall is composed of
it is always noticed that, taken especially on the eastern side,
as at the close of the 14th century even on the city wall of
Viterbo. In the vicinity of the bastion and found also
yet no contrast to the east, not at the foot but above the
terrace. Certainly on the terrace and in the bastion found the
terrace. On the other hand occur the circular bay towers
at the base of the wall, which are also arranged on the walls
of the grand master's residence at Viterbo. In addition
the tower, where they afford a position of 16.4 ft diameter,
where existing holes of no less extent are arranged between
the massive capitals, and the oblique side of these and where
the line of time, also particularly have occurred the structure
of the front of the bay tower, then and great importance for
the tower in case of direct attack on the bastion and
tower. Just as they occur on the wall towers in Viterbo, I
have only the bastion and the tower in Viterbo, and
of 16.4 ft, even if an arched hole in the tower, or a semi-
circular tower, even if an arched hole in the tower, then from
the outside side of the tower. In the case of these bastions
the tower towers even more than in the tower
of the 14th century as particularly visible in the tower. They
especially play a part also in the bastion bastion of
Charles IV. The French bastion towers are the name of
"bastions", and Viterbo is called Viterbo and city of
Viterbo. An earlier name expression for them (for the name
of which name does not appear to us as suitable) is unknown.
to us. It is also in ornamental use, since in the 14th cen-
tury the importance of these towers was little for the bastion-
ry, then we may very well think, that they came into occu-
pation for lookouts, or if they projected and were open at the
bottom, could already become so important for the defense,
that we would not wonder at an earlier occurrence. But since
no use of similar stone construction is known to us from the
12th and 13th centuries, then we believe, that they were
then constructed of wood, and that we have to seek their origin
the works bastion of towers, that likewise is very much more
some sort of wooden tower.
But in the 14th century we also have the bastion towers and

had the importance of a remembrance. Men were accustomed to see military structures equipped with them, and therefore still always employed them, thus especially on Rhenish buildings, so at the close of the 14 th century even on the city wall of Nuremberg. In the verticals of the battlements are found slots, yet in contrast to the eastern, not at the foot but above the parapet. certainly on the towers are no longer found the battlements. On the other hand occur the ornamental bay turrets at the edge of the roof, which are also arranged on the angles of the grand master's residence at Marienburg. In magnitude as there, where they afford a platform of 16.4 ft diameter, where casting holes of no less extent are arranged between the massive corbels, and the oblique side of these enlarges the line of fire, also particularly made possible the sweeping of the front of the bay itself, they had great importance for the defense in case of direct attack on the otherwise open house. Just as they occur on the wall towers in Nuremberg, their warlike importance was not especially great (Fig. 132, p. 196), even if an archer had room in the turret, or a sentinel could better observe from thence the vicinity, than from the shooting slots of the tower. In spite of their little importance these turrets ever more came into use in the course of the 14 th century as particularly usable decorations. They especially play a great part also in the Bohemian buildings of Charles IV. The French designate those turrets by the name of "echanquette", and Viollet-le-Duc calls Prague the city of turrets. An earlier German expression for them (for the name of watch house does not appear to us as suitable) is unknown to us. It is also in ornamental use, since in the 14 th century the importance of these turrets was little for the defense, then we may very well think, that they came into occasional use for lookouts, or if they projected and were open at the bottom, could already become so important for the defense, that we should not wonder at an earlier occurrence. But since no use of similar stone construction is known to us from the 12 th and 13 th centuries, then we believe, that they were then constructed of wood, and that we have to seek them under the works designated as towers, that likewise in any case were some sort of wooden tower.

78 — But in the 14 th century we also have the fact on towers and

other buildings stand on slightly projecting corbels, that are connected by ornamental arches, leaving a narrow gallery behind them at the base of the roof. Their course is partly broken by such decorative turrets, as we have just described them; occasionally such are merely placed at the angles. This flat projection of the battlements on corbels is nothing else than the purely ornamental imitation of such galleries, that project on strongly projecting corbels. Thus we must assume, that previously the battlements where such casting holes existed projected from the face of the wall in such a manner, as we have assumed in our restoration of the court in Fig. 70 (p. 128). certainly only vestiges of this arrangement remain there; they are only preserved for us in Germany in examples, that are later than the ornamental imitation of these in relief, and we know in fact at the moment none such to name out of Germany, which go back beyond the close of the 14th century.

In Italy and France older ones may occur. For Italy indeed has become typical the arrangement of massive and boldly rising corbels, which bear the heavy appearing series of battlements. It is also found there placed on far earlier buildings. We can also assume, that those of towers and hall structures in the 14th century were no longer calculated for (visible) roofs. However this was still everywhere the case in Germany, and where we see that the battlements are so arranged, that the roof cannot be placed on the battlements, these there only enclosed an open passage at the edge of the roof rising behind them. We give in Figs. 188, 189, ²³² the elevation and section of the row of battlements on the little Cunibert's tower at Cologne (at a scale of 1 : 25), since this example is characteristic for the form of these battlements for the middle and lower Rhine. The upper wall is of tufa; the corbels and the ornamental frieze are inserted in sandstone. The proportion of width of spaces to that of the verticals is not quite 1 : 2. In the verticals are the shooting slots. ²³³

Note 232. From Wiethase, plote 51.

Note 233. We also repeat at this opportunity, that in all similar designs and so in Fig. 135, we must assume, that originally roofs existed or at least were intended, even if we have only indicated such there.

It is self-evident, that the dimensions of the building are

not entirely without influence on those of the battlements; the exactness given in the dimensions belongs to the main part. Therefore we do not call attention to the fact that it is the crown of the building represented in fig. 126, and refer to a comparison with fig. 125, where the battlements show essentially greater dimensions. We cannot now certainly establish simply as a matter of fact, when we see under the battlements; for it has dimensions exceeding the height of a man. If thus we must assume that behind this wall was found an elevated passage, that only left above it the height of the passage to the lower end of the space. There are also conditions for the battlements on the southern side of the tower at the corner, of which in addition to fig. 126 (p. 127) we have an elevation (at scale of 1 : 25) on the left hand side and a section in fig. 129. Likewise here the external appearance of the building indicates that the passage would extend above the cornice more than its natural size, that more than about 3.8 ft; hence the thickness of the wall has been continued above above the defensive platform.

Besides it may be said, that our section pictures the construction of it to be reconstructed. The beams have been in which heavy beams are inserted horizontally. The beams are not covered with clay, and the upper side of the beam is finished with a layer of clay. The space on the beam is filled with sand and on this is laid a brick floor on the beam and sand filling, set well in mortar, then a thicker coating poured on it, finished and smoothed on top, which consists of pointed brick fragments and debris. This is so tight and hard, that it certainly could prevent the climbing from underneath for a long time, even if the roof were lacking. Our section also pictures it to be seen how the roof is not on the defensive platform. It stands without any connection with the lower beams, but it does not rest on the battlements themselves, but on posts, that stand behind the battlements and are connected by string. The passage is constructed of heavy stone slabs; that so are the verticals composed of slabs of stone; easy to not open have naturally the width of the space. The slabs are so thin in proportion to their dimensions, that the entire construction is supported only by the posts, which are arranged

not entirely without influence on those of the battlements; the example here given in its dimensions belongs to the smallest. Therefore we do not omit to call attention to the fact, that it is the crown of the building represented in Fig. 135, and refer to a comparison with Fig. 156, where the battlements show substantially greater dimensions. We cannot now certainly designate simply as a parapet, what we see under the battlements; for it has dimensions exceeding the height of a man. Thus we must assume that behind this wall was found an elevated passage, that only left above it the height of the parapet to the lower end of the space. Thus also the condition for the battlements on the Schlösselfelder religious house at Nuremberg, of which in addition to Fig. 129 (p. 187) we give an elevation (at scale of 1 : 25) on the adjacent plate and a section in Fig. 190. Likewise here the external appearance of the building required that the parapet should extend above the cornice more than its natural size, thus more than about 3.3 ft; hence the thickness of the wall has been continued above it, and so the passage for defenders is elevated considerably above the defensive platform.

Besides it may be said, that our section permits the construction of it to be recognized. The beams have gains in which heavy beams are inserted lengthwise. The joists are well coated with clay, and the upper side of the beam is likewise covered with clay. The space on the beams is filled with sand, and on this is laid a brick floor on the beams and sand filling, set well in mortar, then a thicker coating poured on it, tamped and smoothed on top, which consists of pounded brick fragments and gypsum. This is so tight and hard, that it certainly could protect the building from dampness for a long time, even if the roof were leaking. Our section also permits it to be seen how the roof is set on the defensive platform. It stands without any connection with the lower beams, but also does not rest on the battlements themselves, but on posts, that stand behind the battlements and are connected by plates.

The parapet is constructed of large stone slabs; just so are the verticals composed of slabs of stone; they do not once have entirely the width of the spaces. The slabs are so thin in proportion to their dimensions, that the entire construction is properly stable only by the posts, which are attached

to them and bear the roof beams and rafters. Shooting with the machines of the 15th century, they could not possibly resist. But also Schindler indeed means not less than all, when he built his strong house. He only thought instead of shooting himself against a riot of his fellow citizens, as two centuries earlier one had tried in the revolt of the peasants against the patrician families in Nuremberg. For this meant suffice house and battlements, and even so the lightly built considerable protection they were not to fall outward. An additional construction for solidifying them does not exist; only the roof beams must act as anchors.

174. Richter Architecture of Nuremberg.

The present example shows us in a very characteristic manner how such a serious element of origin, in its importance so essential to military architecture, must suffer an enormous simplification, that by the scope of our work we are compelled to impose restrictions on ourselves in very respects. Therefore we unfortunately cannot go into the form of the battlements of the Italian Renaissance, whose partly foreign names are intended to give for marks of parties of Gothicism and of the Renaissance. We cannot follow further the ornamental development of the battlements on Romanesque buildings, but still must devote some attention to the resulting ornamentation, that developed from the material in the domain of north German brick construction. We reproduce in Figs. 181 to 183 (likewise at the scale of 1 : 25) plan, section and elevation of a portion of the battlement of the stone gate tower in Nuremberg reproduced in Fig. 184 (p. 225). In contrast to the just described Nuremberg battlements, in which the pattern is partially and is independently decorated, on which then without reference to the former division the decoration of the vertical is established, how one even holds the division as necessary, the subdivision is here taken as the basis for the entire ornamentation. As visible, piers are built to the height required by the verticals at equal distances; each pair of such piers are connected at top, and with their recessed panel and their projecting crown form a vertical. The panel is subdivided like a screen by a moulded post and two ornamental ar-

to them and bear the roof beams and rafters. Shooting with the machines of the 15 th century, they could not possible resist. But also Schlüssselfelder indeed might not fear such at all, when he built his strong house. He only thought indeed of securing himself against a riot of his fellow citizens, as two decades earlier one had raged in the revolt of the artizans against the patrician families in Nuremberg. For this might suffice house and battlements, and even so the lightly built angle turrets, that indeed must not be heavy, if with the very considerable projection they were not to fall outward. An aiding construction for holding them fast does not exist; only the roof beams must act as anchors.

174. Richer Arrangements of Battlements.

The present example shows us in a very characteristic manner how such a serious element by origin, in its importance so essential to military architecture, must suffer an enormous transformation, as soon as it had become meaningless. We strongly regret, that by the scope of our work we are compelled to impose restraints on ourselves in many respects. Therefore we unfortunately cannot go into the form of the battlements of the Italian Renaissance, whose partly foreign shapes are erected to pass for marks of parties of Ghibellines and of Guelphs. We cannot follow further the ornamental development of the battlements on Bohemian buildings, but still must devote some attention to the peculiar ornamentation, that developed from the material in the domain of north German brick construction. We reproduce in Figs. 191 to 193 (likewise at the scale of 1 : 25) plan, section and elevation of a portion of the battlement ²³⁴ of the stone gate tower in Brandenburg reproduced in Fig. 164 (p. 225). In contrast to the just described Nuremberg battlements, in which the parapet is horizontal and is independently decorated, on which then without reference to the lower division the decoration of the vertical is established, now one even holds its division as necessary, the subdivision is here taken as the basis for the entire ornamentation. As visible, piers are built to the height required by the verticals at equal distances; each pair of such b fiers are connected at top, and with their recessed panel and and their projecting crown form a vertical. The panel is subdivided like tracery by a moulded post and two ornamental ar-

arches. The simple width of such a panel, that is carried to only half the height, gave the the design for the space. The alternation of glazed and ordinary bricks with the stucco ground gives a charming play of color, the strong relief of the members a pleasing shadow, that in consideration of the plan is perhaps too bold, but in reality where it occurs against the play of color of the different materials, appears excellently well calculated. Of very good artistic effect is the proportion of the dimensions of the battlements to the entire building, whose height we have to regard as increased by the ditch. But if we conceive these battlements filled with men, and must be defended against an enemy ascending the tower, then the height and thickness of the parapet would make this impossible. The entire row of battlements is nothing more than a decoration of the tower according to a motive, which the old derivation regarded as suitable for military architecture. The addition of slots for shooting was no longer held to be necessary, in order at least to make the gallery usable for placing archers.

Somewhat more appropriate appears the arrangement of battlements on the defensive platform over the gatehouse of the Neustadt gate at Tangermünde, where at least the dimensions of the human body are better suited; likewise the bay (Fig. 194),
235 there placed in the middle of the gate, and is decorated live the verticals of the battlements, having in every respect dimensions corresponding to its purpose; on the other hand we might doubt, that the open rosettes in the bay, as in the verticals and in the parapet under the spaces, are openings suitably constructed for shooting. In any case the intention to ornament has contributed more to the forms received by these openings for shooting, than suitability for fighting. More appropriate is certainly the construction of the lower gallery on the round tower of this gate (Fig. 170, p. 227). If we assume that the rather large window openings were protected by heavy wooden shutters, then an effective fire could be maintained from thence on all sides, and if the enemy had come near enough, a severe reception for him was prepared by the openings in the floor of the gallery between the corbels. If then the added wooden gallery even supported this effect in some degree, then must the tower be a strong bulwark against the enemy, even if the uppermost gallery and the battlements were

In conclusion for some attention be given yet to the state, as they were conducted in this latter case. We have seen the first of these appear in the courtyard, building, and have already said of them that they were always narrow in the center, face of the wall, but were made wider inside. This arrangement was also seen in the courtyard in the courtyard of the house in question. The 192-200 exhibits the construction of one of the sides of the window at the corner at the corner. The other exhibits that one with a crossbar, was as low as a short of about 1.6 ft. could not pass for into the interior of the room, but it must accordingly have the crossbar before the window, and there was then limited to a rather small angle, while the slot with a width of 2 ft. was still wider enough to be visible. One side, namely, showed the corner as a mark. From the position of the corner in the construction of the box and crossbar, for the slot to have the greatest possible extent vertically, as the slot was not, in fact, the same in width as the slot, which of the slot shown, would have the same position of movement, when he found the window in the room, and would have been before his face. Since he apparently had to shoot downward, then obviously a shooting window was necessary for a great thickness of the wall, also partly to obtain a greater angle of fire, also with a greater width of the slot, as we have already seen on the other side of the case 194, and Viollet-le-Duc shows in the greatest extent on certain conditions at the corner.

With the introduction of firearms the conditions did not change at first. Both for reasons as for crossbars (which were common more than a further extent of the window, but became too heavy to be used here, and had a look better for firing) was required a long slot, in order to have the view freely from above like the crossbar. The smoke produced by firing was obstructive nature, and that under all circumstances the mark must project from the slot. But then it was a slot were already sufficiently visible externally by the slot, to serve as a mark, then the smoke was completely

a mere decoration.

Note 235. From Adler. Plate 34.

175. Later Slots for Shooting.

In conclusion let some attention be given yet to the slots, as they were constructed in this later time. We have seen the first of these appear in the crusaders' buildings, and have already said of them that they were always narrow in the outer face of the wall, but were made wider inside. This arrangement was also still the prevailing one in the beginning of the 15th century. Fig. 195 ²³⁶ exhibits the construction of one of the slots of the Mühlen gate tower at Brandenburg. The plan indicates that one with a crossbow, whose bow had a chord of about 1.6 ft. could not pass far into the interior of the slot, that he must accordingly hold the crossbow before the opening, and thus was then limited to a rather small angle, while the slot with a width of 5 ins. was still wide enough to be visible afar, thereby serving the enemy as a mark. From the beginning onward in the construction of the bow and crossbow, for the slot to have the greatest possible extent vertically, so that the archers, inserting the weapon in them as far as the width of the slot allowed, should have the utmost possible freedom of movement, when he swung the weapon in the arch downward vertically before his face. Since he generally had to shoot downward, then particularly a sloping bottom was necessary for a great thickness of the wall, also partly to obtain a greater angle of fire, also with a greater width of the lower end, as we have already seen on the plate next page 194, and Viollet-le-Duc shows in its greatest extent on certain buildings at Carcassonne.

Note 236. From Adler. Plate 17.

With the introduction of firearms the conditions did not change at first. Both for muskets as for arquebuses (which were nothing more than a larger example of the musket, that became too heavy to be held free, and had a hook beneath for fixing) was required a long slot, in order to insert them vertically from above like the crossbow. The smoke produced by firing was obstructive inside, and thus under all circumstances the muzzle must project from the slot. But then if the slot were already sufficiently visible externally by its size, to serve as a mark, then the smoke gave still more opportunity

for this, and with further reasoning balls one could more easily hit the gun having through the slot, than with one window. The slot and the gun have a tolerably wide; but in them is inserted a wooden cylinder fitting quite close, that can be rotated about its axis, and which has a slot sufficiently wide for passing through the musket. This cylinder was so placed, that the slot was not turned outside, as then every ball struck the wood and remained in it; only when the man had struck his musket through the slot did he turn it so far, that he could quickly aim and fire, then turning the cylinder again at once before he withdrew his weapon, he found complete protection. There came into me two ideas of such cylinders, one of which had a slot widened below, Wids. 198, 199, for better understanding given at a larger scale, the plans of both cylinders were submitted, by which it is evident, that the cylinder of fire could make a considerable angle.

in Bavarian Swabia; 237 only there instead of the cylinders are arranged wooden balls, these are bored and can be turned in all directions, so that the slot externally has only a small round hole, and when one strikes the musket through the hole in the ball, he could fire in any direction, right and left, up or down. It is self-evident that the hole was just large enough to aim over the barrel, just as in the previously mentioned case of the slot. Yet the outlook was so restricted, that still the advantages of the construction were not enough to ensure permanently the introduction of these wooden inserts in the slots, and therefore we are then limited to a few cases.

Note 237. Relation between Wöhringen and Donauwörth. As the last step in the development of the slots for shots and belonging to the middle ages, we yet have to distinguish the ornamental form of oblique position instead of vertical, by L-shaped arrangement, by the connection of horizontal transverse slots with the vertical, and by the use of circular and crescent-shaped openings.

176. Measures for Cannon. There men had passed to the use of guns of even small calibre, in order to make loading easier, the mouth of the gun

for this, and with further reaching balls one could more easily hit the men inside through the slot, than with crossbow bolts. Figs. 196 and 197 exhibit an attempt for protecting themselves. The slots are there made tolerably wide; but in them is inserted a wooden cylinder fitting quite close, that can be rotated about its axis, and again has a slot sufficiently wide for passing through the musket. This cylinder was so placed, that the slot was not turned outside, so that every ball struck the wood and remained in it; only when the man had stuck his musket through the slot did he turn it so far, that he could quickly aim and fire, then turning the cylinder again at once before he withdrew his weapon, he found complete protection. There came into use two kinds of such cylinders, one of which had a slot widened below, Figs. 198, 199, for better understanding given at a larger scale, the plans of both cylinder constructions, by which it is evident, that the lines of fire could make a considerable angle.

An entirely similar construction is found on castle Harburg in Bavarian Swabia; ²³⁷ only there instead of the cylinders are arranged wooden balls, that are bored and can be turned in all directions, so that the slot externally has only a small round hole, and when one sticks the musket through the hole in the ball, he could fire in any direction, right and left, up or down. It is self-evident that the hole was just large enough to aim over the barrel, just as in the previously mentioned case of the slot. Yet the outlook was so restricted, that still the advantages of the construction were not enough to ensure permanently the introduction of these wooden inserts in the slots, and therefore we see them limited to a few cases.

Note 237. Railway Station between Mordlingen and Donauwörth.

As the last step in the development of the slots for shooting belonging to the middle ages, we yet have to designate the ornamental form of oblique position instead of vertical, by L-shaped arrangement, by the connection of horizontal transverse slots with the vertical, and by the use of circular and crescent-shaped openings.

176. Embrasures for Cannon.

Where men had passed to the use of guns of even small calibre, in order to make loading easier, the mouth of the gun m

may be withdrawn too far. Then with the danger that the emb-
 resure would be still more visible externally, these were ma-
 de wider outside, the narrowest being that of the inner side.
 Yet since it was necessary to sit right or left in one place
 with quite small variation in elevation, these embasures are
 mostly wide and low, as to be seen in fig. 179 (p. 291). Only
 exceptionally is it necessary to rise up or down at the
 same time, so that the embasures must also be made higher.

(p. 183).

Thus we may consider the brief sketch of the development of
 arbitrary architecture in the middle ages. For likewise very
 instructive study for which the 16th and 17th centuries af-
 ford opportunity, may be reserved for another time or another
 pen. For as often architects however have less interest
 since we are less positively in position to need to restore mi-
 nistry buildings of those times; for if these are still so in-
 portant and interesting, they mostly still lack the charm of
 the romantic, that in the case of houses extends to the mi-
 nute structure of the middle ages, so that we shall especially
 receive the order to reproduce a "restoration" of the 16th or 17th
 17th century, and indeed only fast of restoring a castle or
 the 18th century, or to build a smaller residence, that is so
 rarely like a castle. Since many tourists will not even be made,
 if our contemporaries are willing to instruct themselves some-
 what in the meaning and development of the forms. But our ar-
 chitects must, and should especially for more thorough
 researches and studies, for which still much may be inter-
 esting acquire.

must be withdrawn too far. Then with the danger that the embrasure would be still more visible externally, these were made wider outside, the narrowest place being at the inner side. Yet since it was necessary to aim right or left in one plane with quite small variation in elevation, these embrasures are mostly wide and low, as to be seen in Fig. 179 (p. 231). Only exceptionally is it necessary to also aim up or down at the same time, so that the embrasures must also be made higher. (p. 183).

Thus we may conclude the brief sketch of the development of military architecture in the middle ages. The likewise very instructive study for which the 16 th and 17 th centuries afford opportunity, may be reserved for another time or another pen. For us citizen architects however this has less interest, since we are less readily in position to need to restore military buildings of those times; for if these are still so important and interesting, they mostly still lack the chance of the romantic, that in the eyes of laymen extends to the military structures of the middle ages, so that we shall scarcely receive the order to reproduce a "bastion" of the 16 th or 17 th century, but indeed only that of restoring a castle of the 12 th century, or to build a summer residence, that is so nearly like a castle. Since many faults will not then be made, if our contemporaries are willing to instruct themselves somewhat on the meaning and development of the forms. May our study stimulate them, and afford opportunity for more thorough researches and drawings, for which still waits many an interesting structure.

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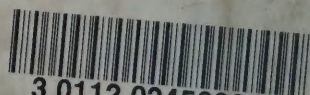
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